THE MEDICAL JOURNAL OF AUSTRALIA

VOL. II.—22ND YEAR. SYDNEY, SATURDAY, AUGUST 10, 1935. No. 6.

Table of Contents

[The Whole of the Literary Matter in THE MEDICAL JOURNAL OF AUSTRALIA is Copyright.]

ORIGINAL ARTICLES— PAGE.

"Sleep and Sleeplessness", by H. M. NORTH, M.B., Ch.M., D.P.M. .. 167

"Insomnia due to Physical Causes", by G. C. WILLCOCKS, M.B., F.R.C.P. .. 170

"Surgical Anuria", by RICHARD G. S. HARRIS, M.B., Ch.M., F.R.A.C.S. .. 173

"Congenital Club Foot", by H. A. SWEETAPPLE, M.B., Ch.M., M.Ch.Orth., F.R.C.S. .. 176

"The Growth Curve of Australian Infants during the First Year of Age. II: A Comparison—North Queensland, Tasmania and New South Wales", by F. W. CLEMENTS, M.B., B.S., D.P.H., D.T.M. .. 182

REPORTS OF CASES—

"Cantharidin Poisoning", by FREDERICK SIMPSON .. 184

REVIEWS—

Heart Disease .. 184

LEADING ARTICLES—

The Treatment of Syphilis .. 185

CURRENT COMMENT—

The Toxic Effects of Tryparsamide .. 186

The Stawell Memorial Prize .. 187

ABSTRACTS FROM CURRENT MEDICAL LITERATURE—

Surgery .. 188

BRITISH MEDICAL ASSOCIATION NEWS— PAGE.

Scientific .. 190

Annual Meeting, Melbourne, 1935 .. 194

Nominations and Elections .. 195

The Stawell Oration .. 195

Notice .. 195

MEDICAL SOCIETIES—

The Public Medical Officers' Association, Victoria 195

The Victorian Medical Benevolent Association .. 195

CORRESPONDENCE—

Treatment of Pyelitis .. 196

Sterilization of Mental Defectives .. 196

The Mortality of Appendicitis .. 196

"Doctor" .. 196

Whooping Cough and Vaccine Treatment .. 197

OBITUARY—

Laurence Lindley Pollock Paterson .. 197

Daniel Mulcahy .. 197

Dixie Paumier Clement .. 197

PROCEEDINGS OF THE AUSTRALIAN MEDICAL BOARDS—

Queensland .. 197

THE STAWELL MEMORIAL FUND .. 198

BOOKS RECEIVED .. 198

DIARY FOR THE MONTH .. 198

MEDICAL APPOINTMENTS .. 198

MEDICAL APPOINTMENTS VACANT, ETC. .. 198

MEDICAL APPOINTMENTS: IMPORTANT NOTICE 198

EDITORIAL NOTICES .. 198

SLEEP AND SLEEPLESSNESS.[1]

By H. M. NORTH, M.B., Ch.M., D.P.M. (London),

Honorary Assistant Physician to the Psychiatry Clinic, Royal Prince Alfred Hospital; Honorary Psychiatrist, Lewisham Hospital, Sydney.

McDOUGALL[4] points out that "there is no sharp line between sleep and waking. Though in sleep we commonly lie relaxed in body, and sometimes, it would seem, entirely inactive in mind, at other times we move and even walk about in sleep; and frequently we think, or are mentally active, in the peculiar way we call dreaming. There is no physiological condition known to be invariably present in or necessary to sleep." Gillespie[1] states that after great fatigue soldiers have slept while on the march. We are told that Coleridge created Kubla Khan in his sleep. Milton tells of:

> My celestial patroness, who deigns
> Her nightly visitations unimplored,
> And dictates to me slumbering; or inspires
> Easy my unpremeditated verse.

Sleep is then not a state of unconsciousness, as some of our patients assume; but rather a state of general relaxation of all the functions of the organism. It means a suspension of all effort—even the effort to go to sleep. As the subject desists from all the activities of the day, he enters into a state of more and more profound muscular relaxation; this means the cessation of all directed mental activity, allowing the thoughts to rove at random, where they list; and so the processes of judgement, criticism and volition are inhibited and random meanings are attached to such sensations as arise,

[1] Read at a meeting of the New South Wales Branch of the British Medical Association on June 27, 1935.

producing the confused and grotesque imagery of our dreams.

Before seeking his couch, the subject has, as far as possible, shut out all sources of light and sound, but by training he learns to disregard unimportant stimuli, as in the case of the city dweller in the presence of traffic noises. Thus he comes to show a high degree of selectivity in his responses to stimuli. Rivers[5] cites the doctor who is awakened by the movements of wires which precede the ringing of his night bell, while he is undisturbed by the crying of his child, to whose slightest sound the mother immediately responds. By a similar development of selectivity an individual may be roused every time the clock strikes; he will be able to claim in the morning with perfect truth that he has heard the clock strike every hour; none the less he has had a thoroughly good night's rest.

It has been seen that the most diverse activities may take place during sleep. On the one hand we have the automatically marching soldier with seemingly complete suspension of his mental activities, and on the other hand the poet in his bed completely relaxed and also oblivious of the outside world, but busied with the images of his poetic creation. It seems that commonly certain functional elements are active while the organism is in repose. Is the converse also true? Can such a series of functional elements be rested while the organism as a whole is awake? Does the harassed business man sleep as the eager golfer watches the flight of the white sphere down the fairway? Here we have the rationale of such forms of therapy as the prescription of a holiday or change of scene, and also occupational therapy. In settling the question of the holiday trip it is not a matter of whether a relaxing or bracing climate is desirable, but whether the seascape, bathing, fishing and so on are more likely to take hold of our patient than the attractions of a mountain resort.

The Effects of Sleeplessness.

After discussing such experimental evidence as is available on the effects of sleeplessness, Gillespie[2] sums up as follows:

> On experimental grounds it can be said that while continuous insomnia in animals can lead ultimately to death, in man the discernible effects of such experimental insomnia as it has been possible to produce are extraordinarily meagre. Clinically it has not so far been my fortune, or rather misfortune, to observe any effect of insomnia of a serious kind. I have yet to see a patient whose mental disorder could fairly be attributed to sleeplessness.

With regard to laboratory animals, Gillespie[3] points out that the observed effects may well have resulted from muscular exhaustion, since it was impossible to keep the animal awake once muscular relaxation was permitted. Indeed it would seem probable that for some of the experimental period the animals would be asleep on the march, like our soldier.

However, sleeplessness is undoubtedly a factor in bringing about an unfavourable termination in many pathological conditions, such as pneumonia, heart disease, and so on. The annual report of the Inspector-General of Mental Hospitals shows exhaustion as a cause of death for a certain number of patients in the mental hospitals. While other factors would be involved, sleeplessness would be a factor, no doubt, in a large number of these deaths from exhaustion. It is in conditions of great restlessness, such as acute delirious mania and acute confusional psychosis, that promptitude, courage and skill in obtaining rest and relaxation may determine between a speedy recovery and a fatal issue.

Experience shows that mental activity in a relaxed subject of the type described in Milton's lines quoted above is wholly benign, while it is the long-continued deprivation of muscular relaxation that is harmful. On theoretical grounds it might be argued that the association areas of the cerebral cortex are so extensive that it is impossible for more than a relatively very few neural elements to be active at one time, whereas the much more limited neural representation of the motor system must be in almost constant activity during waking life. Since any mental effort or volitionally directed thought process at once leads to motor innervation, it is only the random and desultory thought processes, described above, which can take place in the presence of complete muscular relaxation.

Coming now to the various conditions in which we may be called upon to deal with sleeplessness, I shall leave all those associated with bodily illnesses to the reader of the other paper, except to remark that factors of the nature that I am going to discuss may be present here too.

Sleeplessness in Children.

If a careful mental and physical examination reveal no abnormalities, the sleeplessness is certainly due to unskilful handling by the parents, usually the mother. To a large extent the mother constitutes the infant's universe. He is dependent on her for nourishment, warmth and even locomotion. What wonder if every emotion and every mood of the mother is mirrored in the infant! If she becomes anxious and fearful, his universe is a shaky one indeed. She attempts to lull him to sleep with the full anticipation of failure, and he shares her anticipation and does as he is expected to do. I quote a case (from memory) which was observed at the Newcastle Mental Hospital a few years ago.

> A child in arms was brought for admission with the history that it never slept at all, although one fluid drachm of paraldehyde was administered every evening. Things had become so bad that the father, mother and nurse each in turn sat up all night with the patient, each thus having two nights' rest out of three. I was careful to let my nurses know nothing of the history and did not prescribe. Next morning the night nurse's report was "slept well", and not the slightest difficulty was experienced with the child during the remainder of its residence in the hospital.

Such patients can usually be treated quite satisfactorily without removal from the home, and, while one attempts an explanation, the greatest therapeutic asset will be the physician's confident attitude

in the presence of the mother. With older children the same remarks apply, with the qualification that with increasing years the dependence of the child gradually becomes less. In neuropathic families, however, it may never reach vanishing point, even in adult life.

In contrast with the above cases are the victims of *encephalitis lethargica* who have been unmercifully spared from death. Here the so-called sleep-regulating centre in the neighbourhood of the floor of the third ventricle has been attacked by the disease. The pendulum, which controls the rhythm, has been damaged and, though the clock will go, it will never keep time again. Frequently the rhythm is reversed, so that the child sleeps by day and is wakeful by night. I know of no treatment that is of any avail. Even in a mental defectives' institution such patients provide the most difficult problem with which one has to deal, so much so that in many centres in Great Britain special institutions have been provided for children suffering from post-encephalitic conditions.

Coming to conditions occurring in adults, we consider first cases which may be designated "physiological sleeplessness". I refer to persons who may have found it necessary to sit by a sick bed for a prolonged period, and persons who are in the throes of litigation or other trying experiences. Normal sleep usually returns as soon as the cause is removed, but treatment is often desirable while the cause is still operative. A few doses of bromide by day and a hypnotic, such as "Medinal", 0·42 gramme (seven grains), at bed time will be found very helpful and will enable a litigant to make a better appearance in the witness box.

Neuroses and Psychoneuroses.

In the neuroses and psychoneuroses further questioning will show that other symptoms are complained of, such as headaches, palpitation, dyspnœa, epigastric discomfort and flatulence, acid eructations, frequency of micturition, gynæcological disturbances or disturbances of the male organs of sex, various fears and anxieties. The treatment is that of anxiety state or hysteria, as the case may be. Careful inquiry will usually reveal some cause or advantage to be derived from the illness. An attempt should be made to readjust the patient to his environment and to give him healthier interests. As he usually harbours fears that insanity or other dire consequences will come from his insomnia, his medical adviser should reassure him on this point, and after a thorough physical examination inform him that absolutely no signs of harmful effects of insomnia have been detected. At this point I find it helpful to tell the patient that I find that he is suffering from nervous symptoms and that his general condition demands that he should lie stretched out on his bed completely relaxed for at least eight hours every night. He is forbidden to get up to get hot milk, or to micturate, or to "walk the floor", or to go out walking until he is fatigued. He is to let his thoughts rove as they will without any effort to control them. He is to give up all the gadgets, such as counting sheep, which his friends have recommended. He is told that it is immaterial whether he sleeps or not, so long as he lies completely relaxed. No excuse is left for the patient to tell you how hard he has tried to get to sleep; for effort and sleep are contradictory terms: effort means tension, sleeps means relaxation. Bromide should be prescribed three times a day, but to prescribe hypnotics—at least overtly—is only to court trouble. The patient will desire ever new prescriptions and larger and larger doses. Many such patients will be found to come of inebriate stock, and it is only lack of opportunity which has prevented them becoming inebriates. Hence their craving for drugs.

Psychoses.

Next it should be borne in mind that insomnia is a very common initial symptom (not cause) in the psychoses. Is the condition an early case of manic-depressive psychosis, schizophrenia or general paralysis? If so, it is essential that the cause should be recognized at the earliest possible moment. In manic-depressive psychosis and schizophrenia we can hope to abort the attack or at least to persuade the patient to seek treatment before certification becomes necessary; and in the case of general paralysis we may institute malarial therapy while only a minimum of damage has occurred in the cerebral cortex.

Other patients again are suffering from undeveloped manic-depressive psychosis or schizophrenia; they may give a history extending over years, but may never develop a frank psychosis. These borderland cases belong to the groups of manic and depressive temperaments described by Kraepelin and schizoids of Kretschmer.

I have not time to go fully into this large subject, but shall content myself with mentioning two points of considerable practical importance. First, morphine, indispensable as it is in conditions associated with pain, should never be administered to an excited patient, as experience shows that its only action is greatly to increase the excitement, and if it is repeated it may render the patient quite uncontrollable. This does not apply to the use of morphine in association with hyoscine, when the morphine is a valuable corrective to the extremely depressing effect of the hyoscine.

The second point is that in this group hypnotics are frequently indicated, and, in the event of domiciliary treatment, the difficulty arises that the patient may take his entire supply of hypnotic in one night, either with suicidal intent or in order to enjoy an inebriate orgy. It is therefore wise to see that the total amount prescribed at one time contains a sublethal dose. A suggestion has been made to prescribe the hypnotic in powder form with a sufficient amount of ipecacuanha powder to produce an emetic effect if a dangerous number of powders is taken. One should also bear in mind the possibility of the patient requesting more than one medical man to prescribe for him at the same time.

Compensation Cases.

What is the medical assessor's attitude in regard to the complaint of sleeplessness in compensation cases and war pensioners? The insomnia complained of is usually a state of mental activity akin to that which Milton describes as slumbering; he is weaving an epic round the less noble theme of his own sufferings.

The medical assessor should seek for evidence of failure to concentrate, undue fatigability or loss of mental alertness or other symptoms which might be due to loss of sleep, and make his assessment on these. The complaint of insomnia *per se* calls for no additional assessment.

References.

(1) R. D. Gillespie: "Sleep and the Treatment of its Disorders", 1929, page 79.
(2) R. D. Gillespie: *Loco citato*, page 42.
(3) R. D. Gillespie: *Loco citato*, pages 33 and 38.
(4) William McDougall: "An Outline of Abnormal Psychology", 1926, page 76.
(5) W. H. R. Rivers: "Instinct and the Unconscious", 1920, page 111.

INSOMNIA DUE TO PHYSICAL CAUSES.[1]

By G. C. Willcocks, M.B. (Sydney), F.R.C.P. (London),
Honorary Physician, Sydney Hospital, Sydney.

Dr. North is to be congratulated on his able discussion of sleep and sleeplessness. I thought that, following on Dr. North's paper, some consideration of the physical aspects of insomnia would be appropriate. I realize, of coure, the difficulty of explaining the processes at work; nevertheless I think it appropriate to recall some of the well-known facts concerning sleep, the consideration of which cannot but be helpful in explaining failure to sleep.

Mechanism.

The mechanism of sleep puzzles us much today, and yet we do know some facts about the state of sleep which were not known to our ancestors. In illustration of this point I quote Mr. Thomas Cogan, who, in a treatise on sleep published in 1612, gave the following definition:

> Sleep is the rest of the animal body, proceeding of some profitable humour moistening the brain; vapour and fumes rising from the stomach to the brain, where through the coolness of the brain they become congealed, do stop the conduits and ways of the senses and so procure sleep.

The little more that is known about the subject at the present day is soon told.

You will recall that sleep is associated with a fall in systolic blood pressure, that the pulse slows, the respirations become slower and deeper, oxygen intake is increased, and the output of carbon dioxide is reduced. The volume of air breathed is reduced 50%, the basal metabolic rate falls about 15%, and the body temperature falls by 2° to 5° F.

Purves-Stewart states that the brain is generally anæmic during sleep. Another interesting point he mentions is that an animal from which the cerebral hemispheres have been removed still shows regular alternations of sleep and waking.

Apart from the fact that the eyes close and the pupils narrow, I do not think there is much more known of the mechanism of sleep from its physical aspect at the present day.

Sleeplessness.

Now to consider the subject of sleeplessness, in order to have some basis on which to consider the subject I have prepared a slide on which are listed a number of conditions associated with insomnia.

(1) *Due to Faulty Habit or Hygiene.*	(3) *Due to Chronic Disorders.*
Change in the day's routine.	Dyspepsia, constipation.
Excitement or bad atmosphere.	Cerebral syphilis or tumour.
Noisy, airless or overheated rooms.	Chronic alcoholism.
Full stomach.	Insanity, neuroses.
Strong tea or coffee.	Heart disease.
Over-use of tobacco.	Cirrhosis of the liver.
Excessive fatigue.	Chronic nephritis.
	Arteriosclerosis.
	High blood pressure.
	Anæmia.
	Polycythæmia.
(2) *Due to Acute Disorders.*	(4) *Insomnia in Children.*
Pain.	Colic, indigestion.
Early stages of fever.	Faults in training.
Meningitis, encephalitis.	Surroundings, noises, lights, talking.
Delirium tremens, insanity.	Worms, teething, earache, night terrors.
Acute nervous exhaustion.	Overwork at school or over-play.
Hyperthyreoidism.	Nervous children.
	Pink disease, pyelitis, chorea.

In considering some of these causes it is interesting to note that when there is environment or disease which interferes with the normal fall in blood pressure, slowing of pulse, oxygen and carbon dioxide balance, and so on, sleep may be disturbed or fail to occur.

Faulty Habits.

Insomnia due to faulty habits or hygiene needs little elaboration. You will, however, observe how great a part mere physical conditions play. Airless or overheated rooms, hotels, or trains for that matter, no doubt act by preventing satisfactory ventilation, if I may use the term, of the blood through the lungs and skin.

No one will deny the importance of skin ventilation, so emphasized by Leonard Hill; and some of you may know by personal experience how stuffy surroundings cause the "nose-closing reflex" to operate. I think Leonard Hill attributed this effect to infra-red rays; I feel sure that lack of oxygen and increase of carbon dioxide also play their part in hindering sleep in these circumstances.

Climate.

Haldane has shown the profound effects of a humid atmosphere with little evaporation in his experiments with the human subject in a glass room.

[1] Read at a meeting of the New South Wales Branch of the British Medical Association on June 27, 1935.

As humidity rises, fatigue is more and more quickly shown; and the effect of humidity is apparent also in the inability to sleep under different climatic conditions.

It is well known that sleep is fitful at high altitudes and during high external temperatures, such as occur in heat waves. A dry atmosphere also lessens the tendency to sleep, but in the humid air of the tropics sleep is often long and unrefreshing. Presumably most of these effects are purely physical, due to the effects of diminished oxygen tension at high altitudes, and to decreased skin and lung ventilation in the tropics.

In fever this insufficiency of ventilation is also an obvious cause of sleeplessness, and the remedy here, as in the tropics, lies in cold or warm sponging or a cold or hot bath, which promotes skin ventilation, in addition to having a sedative effect through the nervous system.

Toxic Causes.

The other causes of insomnia in the group of toxic causes appear to act through the blood (tobacco, tea or coffee) on the nervous system, or perhaps directly on the nervous system, as in excitement or with a full stomach.

So far as we have gone, all these effects referred to as causes of insomnia are physical—they include unsatisfactory skin or lung ventilation, the effects of changes in the circulating blood, and the effects of stimuli, from without or within, on the nervous system.

Pain.

I am not sure how far pain should be considered tonight in discussing insomnia.

I need not spend time in discussing the necessity of relieving pain by the simplest measures, such as relaxing a tight bandage, relieving the pressure of a splint, the application of strapping for pleurisy, and so on; but there are some points about pain of which I wish to speak.

In conditions such as neuralgia there may be a peculiar development of habit, or a periodicity, and the administration of morphine in neuralgia should be avoided if possible. I recall the case of a man who had an amputation of the forearm.

This man complained of severe pain in the amputated stump every afternoon at 3 p.m. There was considerable doubt as to whether the pain was really severe or not. The nurse's reports indicated on the one hand that he smiled genially while he complained of agonizing pain, and on the other that the sweat poured from him as he gripped the painful part. It was impossible to decide. However, one day I met him as he was retiring indoors at about 3 o'clock in the afternoon, and I asked him if he had pain. He said: "No, but I will have at 3 o'clock." Whether you can develop a habit of having pain or not, I leave to you. Rightly or wrongly I adduced from this that his pain was not so severe as he had led us to believe; indeed, I found that by conversing with him he seemed rapidly to forget the pain.

I could not say now whether this man had severe pain or not. I think not, but he very nearly lured us into giving him morphine unnecessarily; and I have seen cases in which morphine, once started for sleeplessness and apparently severe pain, could not readily be abandoned when the insomnia was found to be worse than the pain.

You will have had similar experience with regard to pain, and I need not remind you of the extreme difficulty of assessing pain. Every expedient should be explored before prescribing morphine for any periodically recurring symptom, whether it be pain or dyspnœa, which prevents sleep or is associated with lack of sleep.

The dyspnœa of bronchial asthma, for instance, will often recur regularly, and when it is known that morphine or adrenaline may be used to relieve the spasm, recurrence is almost certain. In one such case, when the patient had become accustomed to injections of adrenaline and morphine (though there was no relief of the breathlessness by this treatment), the patient refused to see me again because I withheld these drugs. And, on the other hand, I knew a patient who had asthma at 2 o'clock every morning, for which adrenaline was given on several successive mornings, but when the matron told him she would not get up to give him adrenaline again the attacks ceased.

I see that I am bordering on the psychoses and neuroses here, and I believe these subjects have been adequately dealt with by Dr. North.

Neuroses.

Dr. North has told us an excellent method of approach in the sleeplessness of nervous disorders. Concerning sleeplessness in the neuroses, I do feel that the lack of sleep may do harm, and if you can be sure that the patient does not sleep, the administration, three or four times in twenty-four hours, for a week or two, of a mixture containing bromide and phenobarbital may greatly help, pending adjustment of the patient's mode of life.

Fever.

In early stages of fever no doubt the temperature of the body and the circulating toxins prevent sleep. In pneumonia, however, it appears that the administration of oxygen may induce sleep. The same may be said of heart failure, and in both these cases lack of balance between oxygen and carbon dioxide in the blood may be a factor in causing insomnia.

Professor Davies referred in a paper some years ago to a very interesting observation, in which a man who was unable to sleep because of difficult breathing at an altitude of 1,400 feet, found sleep come readily on inhaling carbon dioxide in small amounts. To my mind this was a most arresting observation, because it seemed to indicate a balancing effect of carbon dioxide.

Carbon Dioxide.

It appears that when oxygen lack exists, even carbon dioxide by itself may relieve dyspnœa; so that there may be a sound reason for administering a little carbon dioxide with oxygen in pneumonia and even in heart failure when these gases are apparently ill-balanced. I believe the combined gases

are usually administered regardless of the depth of breathing or the presence or the absence of cyanosis.

According to Haldane it is when the breathing is shallow and feeble that carbon dioxide produces its best effects.

Anæmia.

As you know, insomnia may be an outstanding symptom of anæmia, either primary or secondary, and adequate treatment of the anæmia may completely cure the insomnia. The same applies to erythræmia or polycythæmia.

One patient I remember suffered much from sleeplessness, which was corrected when his blood count was reduced from eight million to about four million red cells with phenyl-hydrazine.

No doubt in such cases the patient is sleepless partly because of a susceptible temperament.

In vascular hypertension the patient may either complain of not being able to get off to sleep or of waking up in the very early hours and being unable to go to sleep again. No doubt this is due to disturbance of the cerebral circulation; possibly the rapid flow of blood through the brain may be enough.

A very different effect was in evidence in the case of a patient of mine who could not sleep unless his bare feet protruded beyond the bed clothes; and this even in midwinter.

Purves-Stewart described insomnia due to low blood pressure in which the patient was drowsy in the erect posture, but could not go to sleep when he lay down; the sleeplessness was often associated with cold feet. In addition to making the feet warm he advised giving hot milk or hot soup at bedtime, and digitalis with bromide thrice daily. This has recently been described in an American journal under a long title.

Those who read late as students may have noted this wide-awakeness after reading for some hours.

Childhood.

The same causes of insomnia may operate in children as in adults; it is, however, extremely difficult to explain the tossing and twisting which some apparently healthy children maintain night after night, except by over-fatigue, mental or physical, associated with a nervous or highly-strung disposition; this is a state of affairs which modern city life definitely aggravates.

In children extreme restlessness at night is a symptom of many ailments; among others particularly I would mention intestinal indigestion. Many children eat a variety of food to which the intestine objects, especially at night, when the higher centres are not active to blot out the slight discomfort. Castor oil or a rhubarb mixture thrice daily may remedy the complaint. In a nervous child ten grains of bromide may be added for a child of five years. Treatment of restless children on these lines is often effective whether there is obvious indigestion or not.

In pink disease nocturnal restlessness is an outstanding symptom, which it may be impossible to relieve. Apart from general measures, I believe chloral and Dover's powders are regularly employed to assist sleep at the Children's Hospital.

In chorea also restlessness and sleeplessness may require sedatives; I believe the most successful in all but the maniacal cases is phenobarbital in doses of 0·03 gramme (half a grain) thrice daily, increased if necessary.

Treatment.

In conclusion one should mention what measures should be taken if, in the absence of pain, the patient does not sleep and when all other measures have failed.

A well tried method is to prescribe 1·2 to 1·5 grammes (twenty to twenty-five grains) of bromide three or four times a day for a few days, diminishing the frequency of the dose after four days and the amount of the dose at the end of a week. Phenobarbital may be used instead, or a soluble preparation of phenobarbital may be used with a smaller dose of bromide; 0·03 gramme (half a grain) of phenobarbital thrice daily is often effective, but in my opinion phenobarbital in doses sufficient to produce sleep is more irregular in its action than bromide.

Both bromides and phenobarbital may cause curious dreams, mental confusion or somnolence in the day time, and these ill-effects are rarer with bromide than with phenobarbital when used to induce sleep.

For inducing sleep by a single draught you may know that a recent review puts chloral as the most effective hypnotic, barbitone second, and the numerous barbitone derivatives, such as phenobarbital, "Amytal", and so on, last.

In treating insomnia by single nightly doses Sir Maurice Craig used to recommend the employment of a sedative such as barbitone, combined in varying doses with some inactive powder, for example, sugar of milk, in order to make the bulk of the powder about the same on each occasion; for instance, on the first night, in order to be certain of producing sleep, 0·42 to 0·6 gramme (seven to ten grains) of barbitone was prescribed with 0·3 gramme (five grains) of sugar of milk; the next night, 0·3 gramme (five grains) of barbitone and 0·42 gramme (seven grains) of sugar of milk; the next night, 0·18 gramme (three grains) of barbitone to 0·6 gramme (ten grains) of sugar of milk; then 0·42 gramme (seven grains) of barbitone, then 0·18 gramme (three grains), then 0·3 gramme, then 0·42 gramme, and so on, but the dose of barbitone being soon gradually reduced till none was given. Crichton Miller also recommends this method in his book on insomnia.

The idea is obviously to make use of suggestion as soon as possible in obtaining sleep. In my opinion suitable patients for this kind of treatment are rare, for many reasons. One reason is that if suggestion is to be used it would be wise to use a

less potent drug than barbitone. Suggestion is a very valuable method if it can be employed.

I recall an out-patient of some years' standing who complained that I had omitted to prescribe her sleeping draught at the last visit. A search of her cards revealed no regularly prescribed treatment except *pil. aperiens*, and it appeared from her description that this was the sleeping draught without which she could not get off to sleep at night.

I may say that this was a case of auto-suggestion; at any rate it was not my suggestion that *pil. aperiens* would induce sleep.

"Sodium amytal" is a powerful hypnotic which may be used in rare instances. In *delirium tremens*, in the stage of hallucination, following sleepless or wakeful nights, I prescribed 0·36 gramme (six grains) one night with excellent effect, the patient waking with a clear mind the next day—rather a rare event in my experience.

This drug may have been used more freely by some of you in such conditions. If effective, it should be valuable in the early stages of *delirium tremens*, in which condition hypnotics are frequently ineffective. Some of my most unpleasant recollections are associated with *delirium tremens* in acute illnesses of powerful maniacal patients in the upstairs wards at Sydney Hospital.

Habit Forming.

A word about habit-forming drugs. Students often ask is this or that a habit-forming drug? In my opinion all hypnotics may be habit-forming drugs, and for this reason the repetition of a nightly hypnotic is strongly to be deprecated; for instance, I have seen several patients who carried a bottle of paraldehyde in their hip pockets, much as you might carry a flask, and who took a swig from the bottle every now and then, much as you might take a swig of whisky; and yet paraldehyde has been held up as the example of a drug which is unlikely to lead to a drug habit. Certainly one could imagine more pleasant drugs with which to form habits.

SURGICAL ANURIA.[1]

By RICHARD G. S. HARRIS, M.B., Ch.M., F.R.A.C.S.,

Honorary Urologist, Hornsby and District Hospital; Honorary Assistant Urologist, Lewisham Hospital, Sydney.

WHEN I was asked to suggest a subject to bring before the post-graduate revision course, surgical anuria occurred to me as one likely to be of interest and of importance; of interest on account of its relative frequency, and of importance owing to the life-saving properties of properly planned surgical intervention.

Anuria in general may be divided into three types: (A) pre-renal anuria, due principally to circulatory changes without actual disease of the kidneys themselves; (B) renal anuria, due to changes in the renal epithelium making it incapable of secreting urine; and (C) post-renal anuria, due to a variety of causes.

Types B and C come under the category of surgical anuria.

In Type B this applies only to those cases of acute nephritis for which decapsulation is occasionally performed. In Type C obstruction is the primary factor and is of paramount importance. This applies equally whether one is dealing with a patient possessing both kidneys or a solitary kidney. In the former case the condition of reflex anuria becomes manifest. It is on the diagnosis of the presence, the position and the nature of the obstruction that the type of operation to be employed will be based. The obstruction may be due to (i) calculi in one or both ureters, (ii) blockage of the ureter by an aberrant vessel to the lower pole of the kidney, (iii) blood clot impaction in the pelvis or the ureter, (iv) ureteric stricture, and (v) surgical division or ligation of one or both ureters.

Each of these conditions may cause anuria by obstructing the outflow of urine from the kidney pelvis when a solitary kidney is present and, in addition, by a reflex mechanism, may inhibit secretion from a normal kidney on the opposite side.

I propose later to quote case histories illustrating these conditions.

It is a proven fact that anuria may persist for ten or eleven days before death supervenes. It is of importance to bear this in mind, as one is justified in temporizing for several days and in attempting, by various medical means at our disposal, to promote the secretion and excretion of urine. Operation, however, should not be deferred longer than seven days, when it may be undertaken without undue trepidation, though early operation following accurate diagnosis is in most cases to be preferred.

Of the medical measures employed we have found in the urological department that repeated applications of medical diathermy over the renal areas for periods of from twenty to thirty minutes three times a day are of great assistance in the stimulation of kidney action. Intravenous injection of a 50% solution of glucose, alone or combined with 10% saline solution, is generally employed in conjunction with the diathermy treatment, especially in those cases in which vomiting is pronounced. Intense sweating and purgation are not recommended.

Another extremely useful procedure, when vomiting is excessive, is the administration of large quantities of fluid by means of the duodenal tube, which may be retained for twenty-four to forty-eight hours.

The Symptomatology of Surgical Anuria.

Anuria generally commences insidiously and progresses rapidly to complete suppression. Localized symptoms of obstruction may be conspicuous by their absence, and diminution in the excretion of urine may be the first noticeable sign. Pain, when present, is of great assistance in the determination of which kidney is fundamentally concerned. It is an outstanding fact, however, that in calculous obstruction pain is as a rule completely absent.

[1] A post-graduate lecture delivered at Lewisham Hospital, Sydney, on June 6, 1935.

Anorexia, vomiting and abdominal distension are common. Œdema is entirely absent, and by its absence helps to differentiate a surgical from a non-surgical anuria.

Diagnosis.

Radiography may be of considerable assistance in the diagnosis, especially when calculus is the causative factor. Intravenous urography is obviously of no value. It is interesting to note in this connexion that the secretion of "Uroselectan" and of allied products is generally delayed, diminished or entirely inhibited from a kidney connected with an acute obstructive ureteric lesion.

Cystoscopy may play an important part both in diagnosis and in treatment. Retrograde pyelography is of no practical value and may be a distinct source of danger.

It is of the utmost importance to recognize that, even though suppression of urine has persisted for several days, with or without renal symptoms, surgical measures may be undertaken with the prospect of complete relief and cure.

Treatment.

The treatment depends entirely on the type of obstructive lesion which may be found. In general, the passage and retention of a ureteric catheter for ten to fourteen days, ureterostomy or nephrostomy are the methods employed.

Illustrative Case Histories

I should now like to quote in some detail the histories of a number of cases illustrative of each type of obstruction, the means of diagnosis, and the treatment employed.

Calculous Obstruction.

Mr. W.A.C., aged forty years, was operated on in March, 1933, a right nephrectomy being performed for calculous pyonephrosis. X ray examination at this time showed no evidence of calculus in the left kidney. He reported back in October, 1933, with a history of pain in the left loin for twelve days and of vomiting off and on for the last ten days. The pain started suddenly while he was resting in bed, and was followed by vomiting. On examination tenderness was present over the left renal region anteriorly and in the lumbar region. The systolic blood pressure was 160 and the diastolic pressure was 80 millimetres of mercury. One hundred and fifty cubic centimetres (five ounces) of urine were passed the first day following admission to hospital, 270 cubic centimetres (nine ounces) on the second day, 150 cubic centimetres (five ounces) on the third day, and 60 cubic centimetres (two ounces) on the fourth day. This patient was being treated empirically for gastric ulcer. On his transfer to the urological department X ray examination was ordered and a calculus was discovered in the left ureter at the level of the third lumbar transverse process, and also two small calculi in the calyces of the kidney. Operation was immediately undertaken. The ureter was isolated and the calculus was removed through a small incision over it; there was a discharge of thick purulent urine. A urethral catheter, size number 10 French, was passed up the ureter into the kidney pelvis. A single catgut suture was placed in the incision and tied round the catheter. Following operation 3·3 litres (five pints ten ounces) of urine drained on the first day, 2·55 litres (four pints five ounces) on the second day, 1·83 litres (three pints ten ounces) on the third day, and 3·3 litres (five pints ten ounces) on the fourth day, and thereafter over 1·8 litres (two pints) per day. The catheter was removed at the end of ten days and there was no leakage of urine thereafter. Steady progress was made for three weeks, when an attack of lumbar pain and leakage of urine through the operation wound occurred. Cystoscopy was performed. A ureteric dilator was passed to the kidney after some slight obstruction had been overcome at the site of the previous incision. Two days later a small calculus was passed. The wound healed completely and the patient was allowed to return home. Four weeks later further ureteric dilatation was performed, since which time the remaining calculus has been passed. There has been an increase of 12·6 kilograms (two stone) in weight since the operation, and intravenous urography reveals a normally functioning kidney.

Another illustration of this condition is provided by Mr. J.M., aged sixty-seven years. He had right nephrectomy performed in 1924 for calculous pyonephrosis. When he was seen in consultation anuria had been complete for five days. There had been no symptoms other than the cessation of urinary excretion. The patient was drowsy and was thought to be suffering from uræmia. On his transfer to hospital an X ray examination was carried out. A stone was found in the left ureter at the level of the fourth lumbar vertebra. Immediate operation was performed. The calculus was removed through an incision in the ureter, and a urethral catheter was passed to the kidney. Thick purulent urine drained and 480 cubic centimetres (sixteen ounces) were measured before the patient left the operating table. It was a singular coincidence that the previous operation of nephrectomy was carried out for a condition due to a stone impacted in the right ureter in an exactly similar position. This patient made steady progress except for some slight leakage of urine through his wound, which cleared up after two or three days.

Blockage of the Ureter by an Aberrant Vessel to the Lower Pole of the Kidney.

Mrs. M.L. was aged forty-five years. In June, 1930, she had been suffering from anuria for five days. She had had her right kidney removed for calculous hydronephrosis in 1927. On admission to hospital the patient was complaining of left lumbar discomfort and had been vomiting almost continuously for three days. X ray examination revealed no abnormality. Cystoscopy was performed and a catheter was passed beyond a dense obstruction about 5·0 centimetres (two inches) below the left kidney, and retained. Six hundred cubic centimetres (twenty ounces) of urine drained from the catheter before the patient left the theatre. In the next twenty-four hours 2·7 litres (four pints ten ounces) drained, and 4·2 litres (seven pints) on each of the ensuing five days, when urinary secretion returned to normal. The patient's blood urea nitrogen on admission was 44 milligrammes *per centum*, and blood creatinin was 4 milligrammes *per centum*. After ten days of catheter treatment the blood urea had fallen to 23 milligrammes *per centum* and the creatinin to 2 milligrammes *per centum*. A pyelogram taken at this time revealed a kink in the ureter at the level of the third lumbar vertebra. The ureter was extremely dilated above this level. Following removal of the catheter on the eleventh day anuria was again in evidence and ureteric drainage was reestablished for a further ten days, after which period operation was performed. An aberrant lower polar vessel was found crossing and kinking the ureter. There was gross dilatation above the ureteric kink. The vessel was divided and the pelvis of the kidney was freed from adhesions. Regular peristalsis was seen in the pelvis and ureter following these procedures, and nephrostomy was considered unnecessary. The subsequent history was uneventful and normal urinary excretion was the rule. An intravenous urogram taken three weeks after operation showed a normally secreting kidney and an unobstructed ureter.

Obstruction from Blood Clot Impaction in the Pelvis of One Kidney plus Reflex Anuria.

Mr. W.G.K., aged forty-eight years, was referred complaining of hæmaturia. Cystoscopic examination with

normal findings was carried out in September, 1934. Pyelography revealed a normal right kidney, but the patient complained of a considerable amount of pain after the injection of one cubic centimetre to the left kidney, and no picture could be procured, though intravenous urography had previously demonstrated a normally functioning left kidney. Severe left-sided pain and grossly blood-stained urine were in evidence for the next six days. Anuria suddenly supervened on the seventh day, when the systolic blood pressure was found to be 170 and the diastolic pressure to be 90 millimetres of mercury. Next day there was still no urine. Pain (which had previously been severe) was completely absent, and there was marked drowsiness. Operation was performed the following day. The left kidney was found to be extremely tense and hard. The pelvis was equally tense, whilst the ureter was completely flaccid. After manipulation urine could be seen coursing down the ureter. A small incision was made in the distended pelvis and blood clot was evacuated. A catheter was passed from the pelvis through the convexity of the kidney and sutured to the capsule. Through the catheter 2·7 litres (four pints ten ounces) of urine drained, and 600 cubic centimetres (one pint) were passed during the first twenty-four hours following operation. The next day 1·2 litres (two pints) drained and 2·4 litres (four pints) were passed. On the third day 300 cubic centimetres (ten ounces) drained and 1·8 litres (three pints) were passed. On the fourth day 180 cubic centimetres (six ounces) drained and 1·8 litres (three pints) were passed. The nephrostomy catheter was removed on the fifth day and there was no leakage from the wound subsequently. This case is also an illustration of reflex anuria.

Obstruction due to Ureteric Stricture plus Reflex Anuria.

Joan W., aged five years, when seen in consultation, was suffering from partial suppression of urine following appendicectomy seven days previously. Hæmaturia and extreme oliguria commenced two days after operation. Tonsillectomy had been performed fourteen days prior to the appendicectomy. There was a previous history of urinary irritability (that is, frequency *et cetera*), though no pus had ever been found in the urine. Three applications of diathermy were given in the ensuing twenty-four hours, but the anuria persisted. Owing to the extremely poor condition of this child, diagnostic tests were not performed, and exploratory operation was undertaken, with the object of performing bilateral decapsulation if acute nephritis was found to be present, or of relieving any obstruction that was discovered. The right kidney was first explored and was about half as big again as a normal adult kidney. The ureter was normal. Decapsulation was performed without delivering the kidney. The left kidney was then exposed and was not nearly so large as the right. The ureter was dilated to the size of a little finger. It was enormously distended and tense as far down as could be felt. An incision was made in the highest part of the ureter, as there was no extrarenal pelvis, and a urethral catheter was passed through the convexity of the kidney. A small rubber catheter was also passed down the ureter as far as it would go, namely, to within 2·5 centimetres (one inch) of the bladder. The patient immediately began secreting urine and was out of danger the next morning. A ureterogram was taken two days later, when a stricture was shown about 2·5 centimetres (one inch) above the bladder. A very small quantity of the injected fluid could be seen trickling into the bladder. One week later a further ureterogram was taken and a considerably greater amount of fluid was finding its way into the bladder, and the strictured area appeared shorter. Cystoscopic examination was carried out one week later. The left ureteric orifice was round and patulous. Small ureteric catheters were passed without difficulty through the stricture. Later, complete ureteric dilatation was successfully performed. This case again illustrates the presence of reflex anuria.

I might add that this case has previously been reported by Dr. Hipsley in THE MEDICAL JOURNAL OF AUSTRALIA.

Obstruction from Surgical Ligation of Both Ureters.

Mrs. W., aged thirty-eight years, had subtotal hysterectomy performed and for the ensuing three days anuria had been present. On examination there was some abdominal distension—there had been no bowel action since the operation. The patient had been drowsy for six hours prior to being seen in consultation. In the absence of any previous history of urinary disturbance cystoscopic examination was carried out. Catheters of varying sizes were completely obstructed 5·0 centimetres (two inches) above the right and the left ureteric orifice. Laparotomy was performed by the original surgeon. The posterior peritoneal suture line was undone and several ligatures were removed. Neither ureter was definitely visualized. After the abdomen had been closed further cystoscopy was undertaken. It was then found possible to pass a Garceau graduated ureteric catheter beyond an extremely tight obstruction in the left ureter. Copious urinary drainage followed. It was impossible, however, to catheterize the right ureter, but some efflux was seen on this side. The catheter to the left kidney was retained in position. In the subsequent twenty-four hours 2·4 litres (four pints) of urine drained from the catheter and some urine was passed alongside the catheter on two occasions into the bed. There was a normal bowel action and the abdominal distension was considerably decreased. Unfortunately acute dilatation of the stomach developed and, despite energetic treatment, death supervened on the sixth post-operative day. There had been undiminished urinary secretion during the period following the relief of obstruction.

Conclusions.

From the foregoing *résumé* and case histories it will be apparent that anuria, from whatever cause of obstruction, is readily amenable to surgical treatment. It will be appreciated that there is a latent period during which medical measures may be practised and an accurate diagnosis established; and further, that operation may be successfully performed even up to seven days from the commencement of the anuria. It is obligatory to procure efficient kidney drainage with the minimum of upset to the patient. The means at our disposal are ureteric catheterization, ureterostomy and nephrostomy.

When the obstruction can be overcome, ureteric catheterization will prove sufficient for all immediate purposes. It will of necessity require to be followed by a suitably planned operation.

When stone impaction has occurred, incision of the ureter and removal of the calculus and drainage of the kidney with a urethral catheter has been found, in our experience, to be a very safe and efficient means of relief, and it is certainly a considerably more simple and rapid method of treatment than an added nephrostomy. Neither stricture formation nor delayed healing of the wound following this method has been experienced.

When the obstruction has been found in the pelvis or at the uretero-pelvic junction, nephrostomy has been the method of choice, together with removal of the obstruction.

In conclusion, I should like to stress again that symptomless anuria is a not infrequent occurrence, and that lives, which otherwise would be sacrificed, may be saved by comparatively simple diagnostic measures and by appropriately selected surgical procedures.

CONGENITAL CLUB FOOT.[1]

By H. A. SWEETAPPLE, M.B., Ch.M. (Sydney), M.Ch.Orth. (Liverpool), F.R.C.S. (Edinburgh),
Honorary Assistant Orthopædic Surgeon, Saint Vincent's Hospital; Honorary Assistant Orthopædic Surgeon, Eastern Suburbs Hospital; Clinical Assistant to the Orthopædic Department, Royal Prince Alfred Hospital, Sydney.

I SHOULD be diffident of addressing you if I felt I was expected to present this large subject in a new light, or to offer anything new, but I do not accept that as my rôle. It is useful to review what is at present known of any topic in order that the mere recital of known facts and unsolved difficulties may stimulate us to further efforts, and I hope that what I have to say will serve as a peg on which to hang a useful discussion.

Definition.

Club-foot is a congenital deformity, usually present at birth, in which the foot is plantar flexed at the ankle joint, inverted at the subastragaloid joint, and adducted at the mid-tarsal joint. Each of these three elements must be present to establish the diagnosis, and each must be so resistant that a considerable amount of force is required to over-correct it.

Ætiology.

Among the predisposing causes, heredity, sex, multiple pregnancies and associated deformities seem to play a part.

Heredity.—Heredity is a factor in some cases. According to Jones and Lovett, Little traced it in four generations, Adams recorded the case of a man with club-foot, who had five children, one nephew and one grandchild with similar club-foot. Ehrenfried and Ketch separately found 5% with a history of heredity.

Sex.—The deformity occurs about twice as often in boys as in girls.

Multiple Pregnancies.—Apparently club foot is found more often in multiple than single births.

Associate Deformities.—Associated deformities frequently occur; for example, hare lip or *spina bifida.*

The actual cause is not yet agreed upon. Some support a mechanical theory; others are content to admit their ignorance by attributing the deformity to an endogenous disturbance of the developing germ.

1. One mechanical theory states that in the early months of intrauterine life an equino-varus posture is universal, and that usually in succeeding months there is a regular succession of attitudes of the foot until the normal is reached. According to this theory, talipes is due to an arrest of the normal process, presumably a mechanical arrest. But subsequent observers have denied that an early equino-varus attitude is usual or even common, and the theory at present is apparently quite discredited.

2. Another supposition is that the deformity is due to pressure or constraint before birth. Examples in support of this are entanglement in the umbilical cord, direct pressure of uterine (or extrauterine) tumours, and interlocking of the feet. Certainly many museums contain specimens exhibiting interlocked deformed feet, in which the deformity appears to be due to the mutual pressure of one foot on another. But the first two examples appear to be very far fetched, and the last certainly falls down in unilateral deformities (which are common) and in cases exhibiting multiple deformities.

3. The "endogenous disturbance" theory. At present, to my mind, the only tenable theory is that which is content to state that the deformity is due to an abnormality in the make-up of the original germ. This admittedly advances our knowledge of the actual cause not at all, but meets all examples, not only of club-foot, but of *spina bifida,* hare lip, extroversion of the bladder *et cetera,* whether occurring singly or in combination. It means that certain cells intended to progress to the formation of a normal organ fail through some intrinsic fault to do so, and that deformity is the result. In support of this is an observation I made during the examination of the feet of a large number of new-born babies some years ago.(1) The foot of one infant at birth exhibited a varus deformity which could not be over-corrected, but the other elements of *talipes equino-varus,* namely, fixed equinus deformity and *metatarsus varus,* were absent. When examined about twelve months later this foot was found to have become a typical club foot, showing that a disturbance of orderly growth, which had commenced before birth, continued afterwards, when no mechanical theory could be invoked in explanation.

Another observation made during the same investigation also supports the theory of endogenous disturbance. It is this. If talipes is due to intrauterine constraint, then the various types of talipes should bear the same proportion to each other as do the attitudes adopted by the foot *in utero.* That is to say, if the calcaneus attitude is common before birth and the equino-varus attitude is uncommon, then *talipes calcaneus* should be commoner than *talipes equino-varus* in the same proportion. Now in my series the calcaneus attitude was twenty times as common as the equino-varus attitude, whereas, according to Whitman's figures, *talipes equino-varus* is thirty-five times as common as *talipes calcaneus.* The attitude at birth then cannot be due to the same cause as talipes. The attitude is due to constraint, talipes cannot be.

Pathological Anatomy.

The deformity consists of inversion of the whole foot, adduction of the forefoot and plantar flexion. As the child grows, adaptive changes occur in the bones and in the soft tissues. The deformity is generally distributed through the foot, affecting all structures — a most important matter in formulating treatment.

[1] Read at a meeting of the Section of Orthopædics of the New South Wales Branch of the British Medical Association on May 16, 1935.

Bony Abnormalities.

This description of the bony deformities applies to a dissection of the club-foot of an adult. Before ossification is complete the tarsal cartilages are susceptible to alteration in shape by moulding, so that the practical importance of the following description is only of moment in an adult patient.

The astragalus owes one element of its distorted shape to its fixed position of plantar flexion. The superior surface of the body is broader in front, where it has never fitted into the tibio-fibular mortice, and this may be a bar to correction of the equinus factor. The neck is longer than normal, inclined downwards and twisted inwards. The inward inclination, which all authors agree upon, may be more apparent than real, that is, owing to a change in articular relationship, the articular cartilage of the head of the astragalus extends further medially and inferiorly than normal, where it articulates with the navicular, and the axis of the head appears to point more medially and downwards.

The calcaneus is plantar flexed and is "tilted" so that its medial tuberosity approaches the medial malleolus. Its anterior end is deflected medially following the direction of the neck of the astragalus, and the calcaneus tends to be directly under the astragalus, instead of to its outer side.

The navicular bone is found articulating with the medial and distal surface of the head of the astragalus, and its tubercle approaches the medial malleolus.

The cuboid bone follows the navicular and is displaced medially. The metatarsal bones are spread like the leaves of a fan. The phalanges are likely to be plantar flexed. The tibia may be twisted inwards on its own long axis.

The Soft Parts.

The soft parts adapt themselves to the bony changes—the ligaments on the outer side of the foot are lengthened, those on the inner are short.

The posterior fibres of the deltoid ligament usually do not participate in the deformity. The middle portion is short and strong, and by its attachment to the sustentaculum holds the *os calcis* in inversion. The anterior portion is the principal bar to correction. It blends with the medial and inferior calcaneo-navicular ligaments, forming a strong and thick mass between the medial malleolus, the sustentaculum and the tubercle of the navicular bone. This mass, which is sometimes three-quarters of an inch thick, has been called the "astragalo-scaphoid capsule".

The posterior ligament of the ankle is short, so that mere lengthening of the *tendo Achillis* may not be adequate to correct equinus.

The evertor muscles are stretched and weak. This fact must be stressed; correction cannot be permanent while their antagonists are capable of overpowering them.

Muscles and tendons are adaptively shortened or stretched, the course of the tendons is deflected, and landmarks are confused, but they are normal in structure and have normal attachments.

The *tendo Achillis* becomes an active invertor, because its insertion on the inverted *os calcis* is necessarily medial to the mid-line of the calf.

All these changes become more severe with increase in age. Muscles atrophy from disuse. The bones of the leg and foot, as well as becoming confirmed in their deformities, grow less. As a result there is unilateral shortening of the whole limb.

Knock-knee is not an invariable accompaniment of the deformity, but while it may be present from the beginning, it is more often the result of faulty treatment, namely, failure to protect the knee by flexion while forcibly manipulating the foot into eversion.

Clinical Features.

The diagnosis depends on the presence of all three elements, and the occurrence of one of them does not constitute a diagnosis of club-foot. In infancy the heel is small, elevated and inturned, the sole faces inwards and is marked by a deep transverse crease opposite the mid-tarsal joint. The crease is evidence of *metatarsus varus*, or adduction of the forefoot, and is present in all cases. Often the tibia is rotated inwards on its long axis. These separate factors of the deformity are fixed, that is to say, they cannot be corrected, except by the application of considerable force. No power in the peroneal muscles can be elicited. After walking has commenced there are these additional features: the patient walks on the outside of the foot, there is a bursa over the cuboid bone, there is no elasticity in the gait, and he progresses (in a bilateral case) by lifting one foot over the other.

The heel appears even more inconspicuous, because, as the ankle joint is strongly plantar flexed, only the posterior portion of the astragalus lies in the tibio-fibular mortice, and the leg bones are in effect displaced backwards.

Diagnosis.

The diagnosis is usually plain. In infants the equino-varus "attitude" is distinguishable by being easily over-corrected.

In later life poliomyelitis of the anterior and peroneal group may result in a deformity not unlike club-foot, and long-standing deformity results in resistant postural contractures. But it is unlikely that these two groups would be affected alone, and the history, if obtainable, should be conclusive. However, some cases are really difficult.

In peroneal palsy the lesions are symmetrical, there is pronounced wasting of the small muscles of the foot, and the degree of functional loss exceeds that found in club-foot.

Prognosis.

Without treatment the prognosis is very unsatisfactory. The deformity progresses from bad to worse and the patient's progression is an ungainly

and painful limp until the end of his days. The ultimate picture is of a foot so inverted that the patient walks almost on the dorsum, and there is a painful callosity in the region of the cuboid bone. The foot is turned in at right angles to the usual posture, and if the affection is bilateral, one foot has to be lifted over the other at each step. Although ungainly, not all patients suffer so much pain as to prevent their activity, and many earn their living in other than sedentary occupations.

With treatment in infancy, the expectation is of a foot normal in form and function. Some deformities are more difficult to cure than others, and it is possible to prophesy the difficulty in any given case. The foot with a short heel is always a tedious one, and marked *metatarsus varus* is always difficult to undo. Moreover, there are some so stubborn that manipulation, however conscientious, will fail to effect a cure, and a bone-removing operation will sooner or later be inevitable. McMurray, of Liverpool, gave it as his opinion that about 3% of infants fall into this category. I should like to emphasize that 97% are curable.

In later life, after the child has walked, the outlook depends on the severity of the deformity, the resistance of the contracted soft parts and the degree of permanent bony change. Some will be curable by manipulation and reeducation; some will demand operation. For the latter a painless and fairly well formed foot will result, and the inevitable loss of flexibility will constitute no appreciable bar to work or to most sport.

For adults the outlook is not quite so hopeful, but there is no case in which a very considerable gain in appearance and usefulness will not result.

Treatment.

Before discussing treatment in detail, let me first postulate six essential principles. These are:

1. Over-correction by the mildest effective means.

2. Maintenance in the over-corrected position until bones have been reshaped and the soft parts have become adapted and the muscles have recovered sufficiently to maintain voluntarily the over-corrected position.

3. Reeducation of the weak evertor and dorsiflexor muscles.

4. Treatment can be only manipulative or operative. Apparatus is useless unless over-correction has first been obtained.

5. The deformity affects not only the foot as a whole, but also the tibia, and manipulative treatment which is directed to all parts at once is more effective than any attempt to reduce the deformity piecemeal, for example, by tenotomy or fasciotomy.

6. No bone operation can be considered until the maximum correction by manipulative means has been obtained.

I shall now describe in detail the treatment of an infant, of a child of walking age, of a severe case in childhood, and of an adult. It will be seen that the strictest regard is paid to these six principles.

Treatment in Infants.

In very young children it is probable that every case can be cured without operation, with the exception of a possible tenotomy of the *tendo Achillis* in the final stage, by constantly repeated manipulation by the parents, carefully taught by the surgeon.

This is a quotation from Jones and Lovett's "Orthopædic Surgery" and represents the view of the Liverpool School.

The method of performing this is here outlined. It is the same as practised by the surgeon when the patient is under anæsthesia and when circumstances are not favourable to maternal treatment.

Two details must always be observed: (*a*) The knee must be kept flexed during manipulation to avoid abduction and hyperextension strain. (*b*) The lower tibial epiphysis must be constantly guarded. The elements of the deformity are corrected in this order: (i) varus of mid-foot, (ii) eversion of heel, (ii) equinus.

If the right foot is affected, grasp the ankle region with the left hand. The thenar eminence is pressed firmly against the lower tibial epiphysis, and the first two or three fingers encircle the medial side of the limb at the same level. The base of the thenar eminence, at the level of the manipulator's navicular bone will be at about the lateral aspect of the infant's mid-tarsal joint and will form a fulcrum. The right hand grasps the forefoot, and the right thumb lies across the dorsum of the foot. The two hands are now in a position to apply the maximum of safe force, without slipping, and a prolonged but not continuous effort is made to unfold the *metatarsus varus* element. This is persisted in for perhaps five or ten minutes, when a definite gain will be detected. The mid-tarsal joint will be found much more mobile, and a position of full correction possibly can be maintained by finger-tip pressure.

The inverted heel then receives attention. Make the infant lie on his right side, so that the outer side of the affected limb lies on the table. The knee, as always, is bent. Grasp the lower part of the leg and the ankle by the right hand, knuckles uppermost, and with the forefinger just below the lateral malleolus. The fingers of the right hand are supported by the table, and the calcaneus is thrust downwards, that is, everted, by firm thrusting pressure of the left thenar eminence. This is also persisted in for several minutes, intermittently, until some gain in mobility and position is noticed.

Finally, the plantar flexion of the foot is tackled. The child again lies on his back and the knee is flexed. The lower end of the tibia is protected by the left hand encircling the ankle region, knuckles downwards. The heel of the right hand, applied in the region of the bases of the metatarsal bones, forces the foot in the dorsiflexion direction slowly, firmly and intermittently. It is very important that dorsiflexion be obtained at the ankle joint, not at the mid-tarsal joint. The heel should be pulled down and the mid-foot pushed upwards. One of the common errors is to bend the forefoot upwards, while permitting the talus and calcaneus

to remain plantar flexed. An ugly and functionally imperfect foot results.

These manœuvres must be thoroughly learned by the mother, and must be repeated thrice daily until the little toe can be made to touch the shin, by finger pressure only.

The mother will then see to it, by more or less frequent manipulations, that this attitude can be reproduced daily until: (*a*) the child can walk, and (*b*) the child is old enough voluntarily to dorsiflex and evert the foot. Active treatment may then, and not until then, cease.

Treatment by maternal manipulation then can be thoroughly effective, but the following requirements are mandatory:

1. Frequent manipulations must be practised until over-correction of all elements of the deformity can be obtained by the pressure of one finger tip.

2. Maintenance of this ability to over-correct must be insured by daily testing.

3. This may not be omitted until the child can voluntarily over-correct the deformity.

4. This power of active over-correction must not be allowed to diminish until the child can walk well with the sole squarely on the ground and with no tightness of the *tendo Achillis*; so you will see that this method of treatment requires constant, unremitting attention until the child is about two years old. And so do all other methods.

At various stages in this routine the surgeon may step in for one or another reason. The modes of interference will now be discussed, and the indications for them, under the following heads: (i) the use of adhesive strapping, (ii) the use of plaster, (iii) the use of the club-foot shoe, (iv) the use of tenotomy.

The Use of Adhesive Strapping.—It must first be realized that the use of strapping is, and can only be, supplementary to the treatment by manipulation. Strapping can only maintain the position laboriously obtained by manipulation; it can never replace this.

The indication for the use of strapping, then, is to maintain the correction obtained by manipulation, so that the gain obtained by any one manipulation will not be lost before the next, and also so that manipulations will need to be practised less often, in that the starting point of each subsequent manipulation will be the finishing point of the previous one. Used this way, and provided always that neither soreness of the infant's skin nor saturation of the strapping by urine impairs the efficiency of this subsidiary procedure, the manipulations may not need to be repeated more often than once every second or third day.

The method of application is simple. A one-inch strip of adhesive strapping is wound once round the forefoot, a start being made over the outer side of the foot; the strapping is carried across the dorsum and then under the sole, back to the starting point. The unattached part is then strongly pulled towards the outer side of the calf and attached there and fixed by the circular turn of a second strip.

This leaves portion of the first strip bridging the ankle, and if this is pressed into contact with the lower third of the leg and fixed there by a third piece, applied circularly around the leg, the foot will be held strongly dorsiflexed and abducted.

But there is a disadvantage in addition to those I mentioned before. The strapping controls two of the elements of the deformity, but does not control the inversion of the heel. If particular care is not exercised, the net result will be a foot which possesses good dorsiflexion and abduction of the forefoot, but an intractable inversion deformity of the heel.

There are other methods of applying strapping to take care of the heel inversion, but I have described in detail the method which is most commonly practised in order to point out its shortcomings.

The Use of Plaster.—My opening statement on the use of strapping applies equally to the use of plaster. Plaster possesses no magic powers of correcting deformity, and is intended only to maintain the correction obtained by manipulation. But, in addition, the long period of complete rest between manipulations encourages, as no other method does, return of power in the evertors and dorsiflexors. No infant is too young for the application of this method, skin soreness emphatically does not occur, soiling and softening by urine are easily prevented by the careful mother, and a coat of shellac varnish relieves the careless one. It is essential in the unintelligent classes, almost obligatory in out-patient work, and economical of time and expense in all classes of patients. It controls inversion of the heel and rotation of the tibia, and, to my mind, no method is at once so effective and so trouble-free.

The procedure is as follows. The child is anæsthetized and the routine of manipulation which I have already described in detail is rigorously practised. Sir Robert Jones used to say: "Twenty minutes for each foot, or until the little toe can be made to touch the shin."

The knee, of course, is flexed, and the epiphyses are protected.

At first the actual application seems to need a bevy of assistants, but with practice one pair of hands is adequate to keep the knee flexed and the foot over-corrected, and to control the elusive and slippery plaster bandage and the plaster wool. The bandage should be short and narrow, say two yards long and two inches wide. Care must be taken that the direction of application of the bandage is from without inwards over the front of the limb; otherwise the foot will be pulled into inversion by each turn.

First the two-inch strip of plaster wool is rolled on, the application commencing at the toes and finishing above the flexed knee. The first bandage follows, encircles the forefoot firmly, and then leaps from the outer side of the foot to the thigh, just above the knee. About four turns of the bandage are now applied to the two right angles formed by the flexed knee and the dorsiflexed foot—from above the knee, under the heel and back to above the knee.

The remainder of the bandage is expended encircling the lower third of the thigh, the knee and the upper third of the leg, thereby fixing these long loops.

The position now is that the foot is enclosed in plaster and so is the flexed knee. Between these stretch two cords of plaster bandage, one standing out from the outer side of the leg, the other bridging the concavity of the inner side. Both are moderately taut.

Now take a sharp knife and sever the medial cord at the level of the ankle. Then apply the second (and final) bandage, encircling the limb from above the knee to the toes—each turn round the leg tightens the unsevered outer cord and exaggerates the over-correction of all three elements of the deformity. While the plaster is setting, take care that abduction of the forefoot and eversion of the heel are maintained. I purposely refrain from adding "increase the dorsiflexion already obtained". It is tempting to do so, but to succumb to the temptation will crease the plaster and cause a sore in front of the ankle.

This method of including the limb to above the knee is desirable for two reasons. It controls the rotation of the tibia, and the infant cannot kick the cast off.

The total period of treatment in plaster varies. The deciding factor is the ability of the dorsiflexors and evertors to over-correct the deformity. This can be elicited in children too young to obey commands by scratching the sole. When that stage has been reached, and until the child can walk well, constant supervision and reeducation are needed lest this ability become lost.

The Use of the Club-Foot Shoe.—As in the case of strapping and plaster, the club-foot shoe is used purely to maintain the over-corrected position. It can be used for infants after manipulation, as a night splint for walking children, and for adults after correction by operation. The only difficulty in its application lies in keeping the foot over-corrected while the splint is being applied. One's fingers rather rather get in the way, so apply a strip of adhesive strapping to the foot, commencing at the outer border. Carry it over the dorsum and under the sole, and pull on the free end. This holds the foot in the desired position while the splint is being applied. The iron stem of the splint has a lateral bend; this is to make it fit a foot in which eversion of the *os calcis* has been obtained.

The Use of Tenotomy.—The indiscriminate subcutaneous fasciotomies and tenotomies which used to be practised are neither necessary, desirable nor (by themselves) effective. Subcutaneous tenotomy of the *tendo Achillis* is not only legitimate in a stubborn foot, but saves time after the maximum correction possible by manipulation has been obtained. However, attempts to correct a foot in which manipulation has been ineffective will not be successful by any subcutaneous cutting—an open operation will be required.

It is unnecessary to warn this audience against impatient recourse to tenotomy of the *tendo Achillis*. Until maximum correction by manipulation has been obtained, the intact tendon insures that immobility of the *os calcis* so helpful while the other elements of the deformity are being corrected.

Treatment in Young Children of Walking Age.

In young children, say under the age of eight, there is no change in the principles of treatment, only in the mode of applying them. That is to say, the shortened structures must be stretched by manipulation and the stretched and paretic muscles must be rested in plaster until they recover their function. Manual stretching, with or without the aid of anæsthesia, can do much, but two other aids are available, namely, the wedge and the Thomas wrench. The wedge is merely a piece of wood of which the apex is protected by rubber or felt, and the base rests on the table. Over the firm apex the foot can be moulded with more facility than by one's hands alone, and the surgeon can bring his whole weight to bear.

"One experienced in the use of the Thomas wrench will save himself needless effort by using it in all cases of even moderate deformity." The blades are applied to the appropriate part of the foot and screwed up tightly. The surgeon applies the requisite force by firm pressure of his hip to the end of the handle—both hands are left free to protect the epiphysis and steady the limb. The three elements of the deformity are attacked *seriatim*, and it is an education to see a stubborn foot melt into shape at the hands of an accomplished manipulator.

Treatment of Severe Cases.

When manipulation fails and the failure is due to intractable soft tissues and not to bony deformity, an open operation to divide the restraining bands becomes necessary. This is usually in a child between the ages of about eight to twelve or fourteen.

The essence of the operation is: (i) to mobilize the navicular bone so that it can be moved round to its proper position in front of the head of the astragalus, and (ii) to mobilize the *os calcis* so that the inversion can be undone and its long axis made to point forwards instead of forwards and medially, and to move it laterally from under the head of the astragalus.

The steps of the operation, therefore, are: (1) A curved incision is made skirting the medial malleolus. (2) The plantar surface of the *os calcis* is stripped of all its attachments, as in the Steindler operation. (3) From the navicular bone are detached the anterior fasciculus of the deltoid ligament, the plantar calcaneo-navicular ligament, and as much as necessary of the dorsal astragalo-navicular ligament. These are the three structures which form what has been called the "astragalo-scaphoid capsule"—frequently a formidable mass of tough fibrous tissue, of considerable thickness. (4) The middle fasciculus of the deltoid ligament is detached from the *sustentaculum tali*. (5) The *tibialis posterior* tendon is divided only if necessary.

It should now be possible to over-correct the foot without force, so that the above requirements are satisfied. The forefoot adduction is corrected as the navicular bone slides around to the front of the head of the astragalus—the inversion of the heel can be corrected when the sustentaculum is freed from the deltoid ligament. The wound is closed and the foot is plastered in a position less than the optimum obtainable in order to avoid harmful pressure from reactionary œdema. Two weeks later this plaster is removed and the foot is fixed in full over-correction in a fresh cast.

If the equinus element has not been corrected, the *tendo Achillis* may be lengthened and the posterior ligament of the ankle divided at the time the plaster is changed. The patient walks in the plaster for a month in order to add the benefits of physiological stresses.

Subsequent treatment consists in reeducating the weakened muscles and in walking exercises. A club-foot shoe is worn at night until danger of relapse has passed, as judged by prolonged supervision of walking.

Treatment in the Adult.

Patients who have not come for treatment until adolescence or adult life present a more difficult problem. The morbid anatomy of the foot differs from that in childhood, in that the tarsal bones are now fully ossified and are permanently deformed. There is in addition, of course, the usual soft tissue contraction, and therefore no bone-removing operation must be considered until the maximum amount of correction by wrenching has been obtained. The management of the case then consists in moulding under anæsthesia by means of the Thomas wrench and plastering in the improved position. This may be repeated more than once, until it appears that no further improvement is possible. Then, and not until then, will the wedge osteotomy be performed. The object is to correct the foot by lengthening the soft tissues on the inner side, not to remove bone to accommodate these shortened tissues.

The operation has no set and formal description. You apply the chisel where it will do most good and remove a curved wedge from the upper and outer aspect of the foot. The bone removed comes from the head and neck of the astragalus, the *os calcis*, the cuboid, and possibly from the navicular bone. The position of the joints is ignored; if it seems that a wedge of the proper shape must include a joint, then that joint must be sacrificed. The wedge is not a regular prism, for its base is curved; the nice estimation of this curve marks the experienced operator.

At times a simple cuneiform osteotomy will not meet the case; then a formal triple arthrodesis of the Naughton-Dunn type is performed, but the foot should not be shortened by removal of the navicular bone. As each joint is attacked in turn, sufficient bone is removed to insure that the final result will be a plantigrade foot.

Summary of Treatment.

At the commencement of the section on treatment I enumerated six "principles". I propose to mention these again for emphasis.

The first principle was "over-correction by the mildest effective means". I have shown how, in the infant, maternal manipulation can be effective. Moulding by the surgeon may be necessary in certain cases, either because the deformity is stubborn or because the domestic surroundings are not favourable. In older children manual manipulation will need to be supplemented by wrenching, and in neglected cases by an operation, when it appears that manipulation and wrenching can do no more—an operation on the soft tissues alone in less severe cases, a wedge osteotomy or a triple arthrodesis in the more stubborn cases.

The second principle is maintenance of the over-corrected position until the bones have become reshaped, the soft tissues have become adapted, and the evertor muscles have recovered. In the infant this is insured by adhesive strapping or plaster until walking age, then a club-foot shoe is worn at night and an external crooked shoe by day. Older children, whether treated by manipulation or operation, need the club-foot shoe and the crooked shoe until experimental omission of these reveals no tendency to relapse.

Thirdly, reeducation is the most frequently neglected factor in treatment. It cannot be too strongly emphasized that treatment must be unremitting until voluntary action of the evertors and dorsiflexors can over-correct the deformity. Until this stage has been reached, the position is exactly comparable with the deformity following poliomyelitis—any correction gained will be quickly lost by the unbalanced muscular mechanism. Exercises under the supervision of a competent masseuse must be carefully prescribed in unambiguous terms; and the dorsiflexors and evertors must be strengthened, at first by assisted movements, later unassisted, and finally against manual resistance. This applies at all ages; in the infant correction must be maintained until he can cooperate in the exercises.

Fourthly, treatment can only be manipulative or operative. This statement does not need further emphasis. In the infant, in the child, in the adolescent and in the adult no mention has been made of apparatus, except for the purpose of maintaining a position already obtained. It should be possible "so to correct the deformity that ambulatory splints are not needed" (Jones and Lovett).

Fifthly, treatment should be directed against each element of the deformity at each sitting. Indiscriminate tenotomies to correct one element at a time are wrong in principle.

Sixthly, no bone operation should be considered until the maximum improvement has been obtained by manipulation. The more nearly successful manipulation has been, the less bone will have to be removed and the less interference there will be with useful joints.

Conclusion.

This relentless attack sounds tedious, but there is no short cut. The end exalts the means, for a crippling deformity has been raised from the position of a social and physical blot to the status of a condition to be tackled with optimism, and, except in late cases, with the expectation of a perfect cure. The treatment of club-foot epitomizes the proper mental approach to all orthopædic problems—*suaviter in modo, fortiter in re*—and proclaims the fundamental preference for bloodless methods.

Reference.

(1) H. A. Sweetapple: "A Study of the Feet of New-Born Infants", THE MEDICAL JOURNAL OF AUSTRALIA, June 25, 1932, page 892.

THE GROWTH CURVE OF AUSTRALIAN INFANTS DURING THE FIRST YEAR OF AGE. II: A COMPARISON — NORTH QUEENSLAND, TASMANIA AND NEW SOUTH WALES.

By F. W. CLEMENTS, M.B., B.S., D.P.H., D.T.M. (Sydney),

From the School of Public Health and Tropical Medicine, University of Sydney.

FROM time to time the possibility of the complete settlement of tropical Australia with a white race arises and almost invariably it is considered that the deciding factor will be the white man's ability to adapt himself physically to a life lived wholly within the tropical belt. Breinl, Cilento, Young, Sundstroem, Priestley and others have presented valuable contributions to our knowledge of the physiology of the white man in tropical Australia.

It was decided to investigate the growth curve of babies born in North Queensland and to compare it with the growth curve of Australian babies in the first year of age (Clements); also from the point of view of national interest it was further decided to develop a growth curve for babies born in Tasmania and to use this in the comparison.

North Queensland.

Through the courtesy of Dr. Jefferis Turner, Director of Infant Welfare, Queensland Health Department, charts from the baby health centres at Townsville, Mackay, Charters Towers and Cairns were obtained. In all, 198 charts were used, totalling 4,354 observations.

The data were analysed in a manner similar to that used in a previous communication, and the results obtained, together with the number of observations for each age period, are given in Table I. From column 3 of this table the mean average weights were graphed and then an attempt was made to fit a suitable curve to the graph obtained by joining the plotted points. As in the case of the New South Wales babies the curves finally selected were parabolas of the second degree, and these are shown in Chart I.

TABLE I.

Queensland.

Age in Weeks.	Males.		Females.	
	Number of Observations.	Weight in Ounces.	Number of Observations.	Weight in Ounces.
Birth	—	—	—	—
2	—	—	—	—
4	63	147 ± 17	86	141 ± 19
6	75	161 ± 19	101	153 ± 23
8	79	171 ± 21	103	163 ± 25
10	82	186 ± 21	105	176 ± 26
12	78	197 ± 22	108	190 ± 28
14	83	210 ± 22	108	201 ± 27
16	84	221 ± 22	108	213 ± 27
18	87	234 ± 22	106	224 ± 25
20	84	243 ± 22	108	233 ± 25
22	85	252 ± 22	108	242 ± 24
24	83	261 ± 20	107	252 ± 23
26	85	267 ± 20	106	260 ± 22
28	84	275 ± 19	106	267 ± 23
30	86	284 ± 20	102	274 ± 23
32	81	291 ± 19	102	281 ± 22
34	81	299 ± 19	100	287 ± 22
36	80	305 ± 19	100	294 ± 22
38	78	312 ± 19	100	300 ± 23
40	78	319 ± 19	96	306 ± 23
42	77	326 ± 19	95	312 ± 23
44	76	332 ± 19	95	317 ± 23
46	73	340 ± 19	89	322 ± 23
48	70	343 ± 19	88	327 ± 24
50	70	348 ± 19	88	333 ± 24
52	63	353 ± 19	82	339 ± 24

Tasmania.

With the kind permission of Mr. E. J. Tudor, Secretary for Public Health, Tasmania, charts were obtained from the baby health centres of Hobart and Launceston. There were 246 charts, which

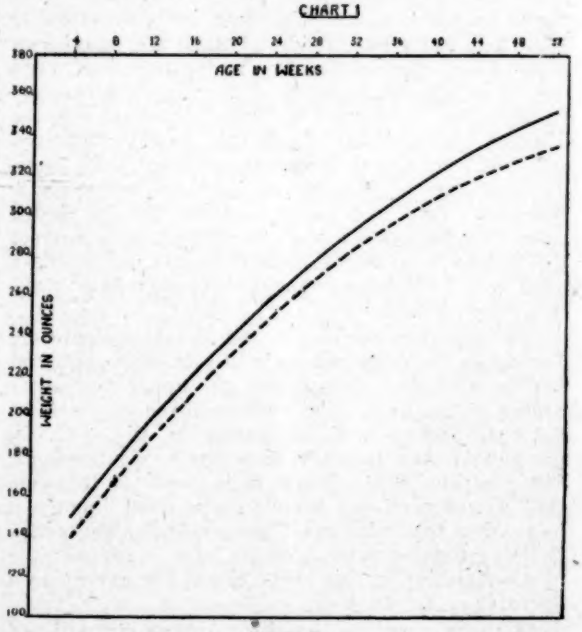

CHART I.

North Queensland. The heavy line represents the smoothed curve of the mean weights of male infants, and the broken line that of the female infants.

supplied 5,928 observations. These were analysed in a similar manner and the results are set out in Table II.

TABLE II.
Tasmania.

Age in Weeks.	Males.		Females.	
	Number of Observations.	Weight in Ounces.	Number of Observations.	Weight in Ounces.
Birth	—	—	—	—
2	—	—	—	—
4	97	149±15	106	143±20
6	111	161±17	116	156±20
8	113	171±18	123	169±21
10	116	183±19	126	181±21
12	118	198±20	126	192±21
14	119	209±23	126	202±21
16	120	220±21	126	213±21
18	119	230±21	126	223±21
20	120	240±20	126	232±21
22	119	249±20	126	242±20
24	119	257±21	126	250±20
26	120	266±20	126	258±20
28	119	274±20	126	268±20
30	120	283±20	126	274±19
32	120	290±20	126	282±20
34	120	297±20	126	288±20
36	118	304±19	126	295±20
38	118	313±19	126	301±20
40	117	317±19	123	306±19
42	111	323±19	122	311±20
44	111	329±19	121	318±19
46	111	336±18	118	323±18
48	109	341±18	114	329±17
50	109	346±18	114	334±17
52	102	351±19	105	339±19

Graphs were similarly drawn of the mean average weights, and finally curves were fitted; these were also parabolas of the second degree. The graphs are shown in Chart II.

The Comparison.

For the comparison it was decided to use, not the actual mean average weights, but rather the weights for each age period obtained in the calculations necessary to draw the smooth curve.

CHART 2

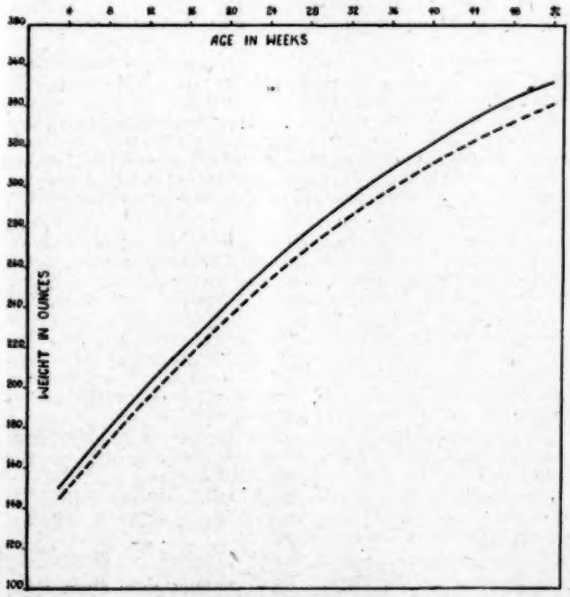

CHART II.

Tasmania. The heavy line represents the smoothed curve of the mean weights of male infants, and the broken line that of the female infants.

The equations of the curves are as follows:

Males.

New South Wales .. $Y = 139{\cdot}437 + 12{\cdot}785x - 0{\cdot}18337x^2$
North Queensland .. $Y = 136{\cdot}486 + 13{\cdot}101x - 0{\cdot}179x^2$
Tasmania .. .. .. $Y = 137{\cdot}976 + 12{\cdot}592x - 0{\cdot}164x^2$

Females.

New South Wales .. $Y = 116{\cdot}2 + 13{\cdot}7x - 0{\cdot}205x^2$
North Queensland .. $Y = 125{\cdot}184 + 13{\cdot}8x - 0{\cdot}218x^2$
Tasmania .. .. $Y = 131{\cdot}256 + 12{\cdot}681 - 0{\cdot}176x^2$

The calculated value for "Y" (the weight in ounces) for each age period is set out in Tables III and IV. The use of this figure instead of the actual weight obtained gives a much more accurate measure, for slight variations due to the small number of observations, different weights of clothing in summer and winter *et cetera* are excluded.

TABLE III.
Males.

Age in Weeks.	New South Wales.	Queensland.	Tasmania.
2	138	—	—
4	150	149	150
6	163	162	162
8	175	174	174
10	186	186	186
12	198	198	197
14	208	209	208
16	219	219	218
18	229	230	228
20	239	240	238
22	248	250	248
24	257	259	257
26	266	268	266
28	274	277	274
30	282	285	282
32	290	293	290
34	297	300	298
36	304	307	306
38	310	314	312
40	316	321	318
42	322	327	324
44	328	333	330
46	333	338	336
48	337	343	341
50	342	348	346
52	346	352	350

TABLE IV.
Females.

Age in Weeks.	New South Wales.	Queensland.	Tasmania.
2	130	—	—
4	143	139	144
6	156	152	156
8	168	165	168
10	180	177	179
12	191	189	190
14	202	200	201
16	213	211	211
18	223	221	221
20	233	232	231
22	242	241	241
24	251	251	249
26	260	259	258
28	268	268	266
30	276	276	274
32	283	283	282
34	290	290	289
36	296	297	297
38	302	303	302
40	308	309	309
42	314	314	314
44	318	319	320
46	323	323	325
48	327	327	330
50	331	331	334
52	334	334	338

From Tables III and IV it will be seen that the greatest actual variation is +6 ounces at the fifty-second week, males, in favour of Queensland.

When viewed through the whole year it will be seen that Queensland babies, both male and female, start life lighter than their New South Wales comrades, slowly overtake them, and, finally, at the end of the first year are, in the case of the males, actually heavier, whilst the females are the same weight as the New South Wales babies.

The same may be said for the Tasmanian babies, except that at the end of the year both males and females are slightly heavier than the New South Wales babies.

These differences amount to but a few ounces in several hundred and are well within the probable error of each weight; furthermore, when an attempt was made to compare the differences statistically it was found that the growth curves for each State were not significantly different.

In the previous communication[1] a comparison was made between the curve obtained by the author and curves for Australian babies obtained by Vera Scantlebury, Brailsford Robertson and Truby King. These were made in Victoria and South Australia and were not significantly different. From this it would appear that babies over the whole of Australia grow according to a growth curve not greatly influenced by geographical distribution.

Summary.

1. A weight curve for male and female North Queensland infants for the first year has been obtained.

2. A similar weight curve for Tasmanian male and female infants has also been obtained.

3. A comparison has been made between these curves and the growth curve for New South Wales infants obtained on a former occasion.

Acknowledgements.

The author acknowledges his indebtedness to Dr. Jefferis Turner, of Queensland, and Mr. E. J. Tudor, of Tasmania, for charts from which the data was obtained; to Mr. J. E. Claffey, of the School of Public Health and Tropical Medicine, for his assistance in the compilation of the data.

Reference.

[1] F. W. Clements: "The Growth Curve of Australian Infants during the First Year of Age", THE MEDICAL JOURNAL OF AUSTRALIA, May 6, 1933, page 543.

Reports of Cases.

CANTHARIDIN POISONING.

By FREDERICK SIMPSON,
Resident Medical Officer, Perth Hospital.

A JUGOSLAV came into hospital assisted by several of his countrymen and in excruciating pain. He was writhing round and holding his left side. He could not keep still, even for a couple of seconds, so intense was his pain.

At 8.30 a.m. he had taken a considerable amount of "Spanish fly", he said, to cure himself of gonorrhœa. At 7 p.m. he started to get his attack of colic and strangury and priapism; only in the left side, however.

The symptoms were controlled by large doses of morphine and alkalis.

Discussion.

The interesting features of the case are:

1. That a person should take cantharidin (presumably the tincture) to try to cure himself of venereal disease.

2. That only the kidney or urogenital tract should be irritated, approximately ten hours later, whereas cantharidin applied to the skin will readily cause irritation. One would think that the intestine would be at least irritated by cantharidin taken by mouth.

Reviews.

HEART DISEASE.

THE third edition of "Diseases of the Heart", by Cowan and Ritchie, maintains the high standard of the two previous editions.[1]

The student, general practitioner and consultant will find it very valuable because it is written lucidly and well illustrated, both diagrammatically and by case histories. The case histories have been well chosen to illustrate and justify the authors' views.

The first two chapters are given to a discussion of the anatomy and physiology of the heart. The third chapter, dealing with cardiac failure, is somewhat disappointing. One would have appreciated a more lucid discussion of cardiac output and circulatory rate.

The chapter dealing with acute endocarditis seems also to be below the general standard of the publication. After reading through this section one feels somewhat confused as to the various types of acute endocarditis and their exact relationships one to the other. The ensuing chapters on chronic valvular disease are very lucid, and the section dealing with the prognosis of chronic valvular disease is excellent.

Two very valuable chapters are given to alternation and tonicity, terms freely used, but, as a rule, not well understood. The significance of physical signs is also a chapter well worth reading. The treatment sections are well done and definitely helpful, actual details of treatment being supplied which are so often lacking in text books of medicine. In the treatment of acute auricular fibrillation it is surprising to find strophanthus is still preferred to digoxin.

The last hundred pages of the book are given over to arterial disease. The authors have taken some trouble to define their terms, thus avoiding confusion when discussing arteriosclerosis and atheroma, but it is somewhat surprising to find the term chronic interstitial nephritis being retained. Some readers might consider that too much prominence is given to the alimentary canal and diet in treatment, and also that "Luminal" or allied drugs should not be included in the list of drugs which are of value in the treatment of hypertension.

Senior students will appreciate the section on aneurysms of the aorta with the admirable explanation of the mechanism of the various signs and symptoms.

Throughout the whole book the subject matter is presented in an interesting fashion, making a detailed reading of it an easy matter.

[1] "Diseases of the Heart", by J. Cowan, B.A., M.D., D.Sc., F.R.F.P.S., and W. T. Ritchie, M.D., F.R.C.P.E., F.R.S.E., with a chapter on the Ocular Manifestations of Arterial Disease, by A. J. Ballantyne, M.D., F.R.F.P.S.; Third Edition; 1935. London: Edward Arnold. Royal 8vo., pp. 647, with illustrations. Price: 30s. net.

The Medical Journal of Australia

SATURDAY, AUGUST 10, 1935.

All articles submitted for publication in this journal should be typed with doubl or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations and not to underline either words or phrases.

References to articles and books should be carefully checked. In a reference the following information should be given without abbreviation: Initials of author, surname of author, full title of article, name of journal, volume, full date (month, day and year), number of the first page of the article. If a reference is made to an abstract of a paper, the name of the original journal, together with that of the journal in which the abstract has appeared, should be given with full date in each instance.

Authors who are not accustomed to preparing drawings or photographic prints for reproduction, are invited to seek the advice of the Editor.

THE TREATMENT OF SYPHILIS.

THE causative organism of syphilis is known, the changes produced by it in the human body are easily recognizable, and certain drugs will destroy it and nullify its effects. A great deal of work has been done on all these aspects of the problem of syphilis, and one might suppose that little new was to be learned about either its diagnosis or treatment. In October, 1928, Professor J. Jadassohn, of Breslau, Dr. Th. Madsen, of Copenhagen, Colonel L. W. Harrison, of London, Dr. Louis Queyrat, of Paris, and Dr. J. H. Stokes, of Philadelphia, met at Geneva under the auspices of the Health Organization of the League of Nations to inquire *inter alia* into "the effectiveness of the treatment of syphilis in selected clinics and dispensaries of several countries". In the report of the meeting it was stated that those present had been struck by the fact that in the fight against syphilis the results obtained had not been such as the almost universally recognized progress of syphilis therapy would give reason to expect. It was felt that new discoveries in the matter of syphilis diagnosis and therapy were not exploited everywhere in the right way and with such promptness as would be desirable, and it was recognized that no uniform generally recognized method of treatment existed. The outcome of this meeting was the organization of an inquiry in Denmark, France, Germany, Great Britain and the United States of America. The results of the inquiry have been collated and put into the form of a report by Professor Hans Martenstein, Director of the Dermatological Clinic of the Municipal Hospital of Dresden-Friedrichstadt.[1]

The chief object of the Health Organization in drawing up this report is to suggest a uniform method of treatment. This has been done, but there are included one or two other observations that are both interesting and useful. Large numbers of sufferers from syphilis have been reviewed in the several countries, but Martenstein is careful to point out that the findings cannot be regarded as presenting a complete picture of the practice current in any of the countries concerned, since by no means all the clinics in the different countries were invited to contribute records. Moreover, no account has been taken of any change that may have taken place in the treatment applied at the various clinics since 1929. It is a pity that the compilation of the report should have taken so many years, but this is perhaps understandable when it is realized that the report covers ninety-four clinics with 25,623 patients, 14,209 men and 11,414 women. The first fact to which attention is drawn is that in many clinics extraordinarily little use was made of serological control and, further, that the percentage of cases in which the presence of the *Spirochæta pallida* was not proved was surprisingly high. In 375 (19·05%) of 1,968 cases classified as "sero-negative primary syphilis" diagnosis was not established by the finding of the spirochæte. In the majority of these cases the organism was not even looked for. The appalling conclusion is reached that in one case out of every eight in which the clinical diagnosis of recently contracted syphilis is made, the principles generally accepted by present

[1] *Quarterly Bulletin of the Health Organization*, March, 1935.

day science are not applied in verification of the diagnosis and in serological control. Most people also would no doubt agree with the further statement that the corresponding proportion among patients going for treatment to private practitioners must be considerably higher. This is a serious indictment of the leading clinics and of medical practitioners in the five countries named. If slipshod methods are used it is no wonder that the results of treatment are not what they should be. It was found that the best results, especially as regards the absence of clinical relapses, were secured with continuous treatment or with intermittent treatment applied according to certain particular schemes. When the results of intermittent treatment in the various stages were compared, it was seen that "the percentage of cases which became sero-negative, and remained so, diminished steadily with the age of the infection, whereas no regular trend was observable in respect of cases that remained sero-positive throughout".

Martenstein draws up a plan for intermittent and also for continuous treatment. These plans cannot be reproduced *in extenso*. He points out that he regards treatment as continuous provided no relapse exceeding four weeks has occurred between injections or courses, and provided further that lapses of such length are quite exceptional. Martenstein's plan for intermittent treatment extends over thirty weeks for "sero-negative primary syphilis", and over twenty-one months for "sero-positive primary and secondary syphilis". His plan for continuous treatment extends over sixty-five weeks. Comment is made on Martenstein's report in Part II of the communication by the group of experts previously mentioned (some changes had been made in the personnel of this group by the time Part II was written). A series of recommendations is made and these are of such importance that their substance may be briefly stated:

1. Treatment should be recommended as early as possible in the sero-negative primary stage. In this connexion the fullest possible use should be made, for purposes of diagnosis, of the microscopical examination of secretions from primary lesions or from lymph glands.

2. Prior to the institution of a system of treatment an adequate physical examination should be made to determine the absence or otherwise of any indication for caution in respect of the dosage.

3. It is essential that in carrying out the treatment a strict supervision of the patient be exercised, especially in respect of mucous membranes, skin, kidneys and liver.

4. Observation, clinical and serological, after completion of treatment should be adequate, and in any case for not less than three years.

5. Adequate examination of the spinal fluid, at least before the patient is dismissed from observation, is essential.

6. The principles to be followed in carrying out the actual treatment should be as follows: (*a*) to employ a comparatively heavy individual dosage of the arsenobenzene and of the bismuth or mercurial compounds, the doses being administered in comparatively rapid succession, especially at the commencement; (*b*) to maintain a persistent attack on the disease, avoiding intervals of such length as to afford the parasite an opportunity of recovering; (*c*) to administer approximately as much treatment to patients in the primary as to those in the secondary stage.

7. It is possible to formulate a system of intermittent and also of continuous treatment that may be expected to yield satisfactory results in ordinary cases or early syphilis.

From the evidence produced by Martenstein it is clear that a few years ago there was need for greater attention to both fundamental principles in the treatment of syphilis and to details in dosage and so forth. There is no reason to suppose that in the years that have elapsed the deficiencies have been made good. This report will be widely circulated—attention has already been drawn to it in medical journals in other countries—and unless those who treat syphilis are grossly negligent, some improvement must follow. The report should be made available in all medical libraries so that every interested medical practitioner may study its pages.

Current Comment.

THE TOXIC EFFECTS OF TRYPARSAMIDE.

TRYPARSAMIDE is a complex organic combination of arsenic in the pentavalent form, containing 24·57% of arsenic. It was first used for trypanosomiasis in 1920 and is now largely employed for syphilis of the central nervous system, particularly in early general paralysis of the insane. It has an unusual power of penetration and for that reason would appear to be of greater value than other organic arsenicals. By some it is deemed to be of greater use in neurosyphilis than pyrexial treatment by malaria or other means. As with other

arsenicals, toxic manifestations arise. These include pyrexia, toxic jaundice, vaso-dilator symptoms, œdema of the face, exfoliative dermatitis and transient urticaria or erythema. The most serious, however, is affection of the optic nerves with amblyopia, or limitation of the visual fields, or actual optic atrophy. There has been much discussion as to the frequency and permanence of visual disturbances following the use of tryparsamide. P. A. O'Leary and S. W. Becker estimated the hazards to the optic nerve as 4·3% which could not be prevented by special precautions. Some observers consider that optic neuritis is generally complete and permanent, but others have found that recovery generally ensues after discontinuing the drug. Tryparsamide base (of which tryparsamide is the sodium salt) is stated not to produce optic neuritis.

E. T. Hoverson admits that temporary or permanent eye damage with partial or total visual changes may occur, but that such dangers are exaggerated.[1] In two years at Kankakee State Hospital over 200 patients received over 2,000 tryparsamide injections. There were no permanent changes of vision, either total or partial, following these injections, in doses of one increased to three grammes. In three cases there was constriction of the lateral visual fields which cleared up on withdrawal of the drug. In another there was temporary blurring of vision which abated on discontinuing the tryparsamide.

Hoverson, however, records that six patients evidenced toxic psychosis, displayed by abnormal mental reactions; but he concludes that such reactions do not contraindicate the use of the drug. The striking mental symptoms always disappeared on its withdrawal. Hoverson considers that because symptoms indicating toxic psychoses occurred in individuals who had not presented such symptoms previously and because the symptoms occurred during tryparsamide medication, they were due to a toxic cumulative effect of tryparsamide. The manifestations supervened after the third, fourth or fifth injection and sometimes arose within a few hours. Return to normal on discontinuing the drug was rapid or slow and protracted over several weeks. The patients were acutely disturbed, restless or noisy, impulsive, turbulent or combative, destructive or impulsive, delusional, or had visual or auditory hallucinations, hearing voices, or were confused and disoriented, not recognizing their surroundings. They were fearful and some imagined that people were planning to kill them. There was an obvious similarity in all the cases and the mental reactions were similar. Hoverson concludes that tryparsamide in certain individuals may produce toxic symptoms but that this fact should not be construed as an additional disadvantage to tryparsamide medication.

Hoverson states that the presence of acute psychotic symptoms during tryparsamide medication has apparently not previously been commented upon. But apparently such manifestations have been noted, although erroneously considered as due to the disease rather than to the remedy. E. T. Hilliard, at the Australasian Medical Congress of 1929, mentioned increase of the symptoms of the original disease coming on usually after the third injection of tryparsamide, when the patients were noticed to be more confused mentally and to show incoordination of gait and tremors of the face and tongue. Hilliard considered that possibly in this condition a temporary increase in activity of the spirochæte brought the organism to a condition or position where it was more easily attacked by the drug. In the light of Hoverson's observations it is probable that the increase of mental confusion was a direct result of tryparsamide medication.

J. E. Kemp and W. C. Menninger[1] report a curious case of fixed eruption due to tryparsamide, and state that the only other case they could find in the literature was one reported by H. M. Robinson in 1933. Dermatitis of this kind must be extremely rare. In the patient reported by Kemp and Menninger, after a series of injections an intensely pruritic "hive" appeared below the left eye and disappeared in forty-eight hours. After a further injection a dusky purple urticarial lesion occurred, extending from the outer canthus of the left eye diagonally across the cheek. It resembled a phenolphthalein eruption, but this drug had not been taken. Further injections followed and the same single violaceous urticarial lesion recurred in the same place and was ameliorated by sodium thiosulphate. Phenolphthalein was given, but did not cause any exacerbation of the lesion. The lesion always involuted when tryparsamide was discontinued, but recurred when it was again exhibited. Apparently it was a fixed arsenical dermatitis due to tryparsamide and did not contraindicate further medication with that drug.

[1] *The American Journal of Syphilis and Neurology*, April, 1935.

THE STAWELL MEMORIAL PRIZE.

In a recent issue of this journal a short note was published regarding the establishment of a prize that will perpetuate the memory of the late Richard Rawdon Stawell. This is a movement that must commend itself to all who came into contact with one who was renowned as a clinician and teacher. That the prize will be awarded for an essay on some subject of clinical significance is what he would have wished. The prize will be open to all graduates of Australian universities of not more than three years' standing. An award will be made at each session of the Australasian Medical Congress (British Medical Association). The fund will be administered by trustees appointed by the Council of the Victorian Branch of the British Medical Association. Subscriptions are invited from members of the Association, from any organizations with which the late Richard Rawdon Stawell was associated, and from any of his personal friends who may wish to contribute. Dr. C. H. Mollison, of 41, Spring Street, Melbourne, C.1, will act as Honorary Treasurer of the fund.

[1] *The American Journal of Syphilis and Neurology*, April, 1935.

Abstracts from Current Medical Literature.

SURGERY.

Post-Operative Embolism and Phlebitis.

POST-OPERATIVE embolism and phlebitis arise in the same manner, they are caused by the same factors and result in tragic disappointments and prolonged hospitalization. Aschoff considered that the thrombosis was the result of a number of variable factors, including changes in the blood plasma, changes in the blood elements, changes in the blood flow, and endothelial damage in the vessel walls, while Lister concluded that impeded venous flow, together with incision into the anterior abdominal wall, was the principal factor. Walters used thyreoid extract to overcome the slowing up of the blood stream, which he considered the principal cause of the condition, and his statistics show a decisive lowering in the number of cases of post-operative pulmonary embolism in 4,500 consecutive cases reported. H. A. Gamble (*American Journal of Surgery*, April, 1935) points out that the flow of blood from the lower extremities and abdomen is due principally to the negative thoracic pressure brought about during respiration, and to muscular contraction and the tone of the muscles of the lower extremities. The author therefore administers carbon dioxide and oxygen as a routine measure for the first twenty-four hours and thereafter substitutes deep breathing exercises. Secondly, he maintains the muscle tone and encourages contraction of the muscles of the leg by the systematic daily use—beginning on the first day after operation—of a device consisting of two bicycle pedals mounted on a broad base, which can be placed conveniently in the bed for exercising the lower limbs. A second advantage from the use of the exerciser is the maintenance of body strength so that patients, when allowed out of bed, remark upon the feeling of strength and well-being, and the ability to walk without effort. The use of these measures over a period of a year has been associated with the complete absence of any post-operative embolism or thrombosis in a 100-bed hospital.

Local Anæsthesia.

L. ADAM (*Surgery, Gynecology and Obstetrics*, March, 1935) reports 31,000 operations performed under local anæsthesia without a single fatality during operation. In considering the choice of an anæsthetic five points must receive attention. The first is capability of paralysing nerve tissue at a low concentration without poisoning surrounding tissue. It must be retained at the site of operation so that a serious intoxication of the central nervous system will not ensue. Complete restriction of sensory function must occur. The anæsthetic substance must be detoxicated by the tissues to prevent generalized dissemination, whilst from the surgical aspect it should be water-soluble and stable during sterilization by boiling. It must be non-irritant and miscible with adrenaline. The site of the operation must also be considered when choosing the anæsthetic substance. Small quantities must be employed when operations are performed on the head, neck or near the spinal column. If the operation is to be very extensive, the frequent injection of small quantities of anæsthetic is preferable to one large massive injection, for some local detoxication occurs meanwhile in the tissues. The author believes that anæsthesia should be induced near the field of operation. Spinal anæsthesia is to be deprecated so long as there is a fatality in each 300 to 500 cases and while severe headaches and bladder paralyses are prone to occur. In discussing the objections to local anæsthesia, mention is made of the fall in blood pressure which may occur, but in the author's experience this has become less frequent with the more careful choice of the anæsthetic agent. The author has never seen tissue necrosis caused by local anæsthetics, and thinks that necrosis must be due to infiltration of tense tissues or an excessive amount of highly concentrated fluid. He does not refrain from infiltrating inflamed tissue if necessary, but circular infiltration in healthy tissues or block anæsthesia may be preferable. Light ethyl chloride inhalation is preferable to complicated local anæsthesia in some inflammatory conditions, such as mastitis. In the process of injection the solution must be made to precede the needle; pain is thus obviated. Intravenous injections are needless. Local anæsthesia may be employed whenever general anæsthesia may be dangerous. If 20 cubic centimetres of a 0·1% "Pantocaine" solution are injected between bone ends, pain and muscular contraction promptly cease and the fracture may be easily and painlessly reduced. Local anæsthesia is indicated in the presence of heart disease, emphysema, bronchitis, arteriosclerosis, kidney disease and impaired liver function. In the author's opinion it alone should be used in operations on the face, neck, thorax and genito-urinary apparatus. The author thinks that post-operative pneumonia following local anæsthesia runs a more favourable course than that following narcosis.

Interinnomino-Abdominal (Hindquarter) Amputation.

G. GORDON-TAYLOR AND PHILIP WILES report five cases of hindquarter amputation carried out by them (*The British Journal of Surgery*, April, 1935). Two operations proved fatal, but three have been entirely successful. The operation was performed in 1891 by Billroth. The first successful operation was done by Girard four years later. The authors review the literature of the subject and give details of their own operative technique. The incision extends around a line approximately following the iliac crest and extending around the inner side of the limb adjacent to the peritoneum. Practically the whole of the innominate bone is removed with the limb. The authors' patients were each suffering from some form of new growth involving the innominate bone or its immediate vicinity. The operation is one of the most colossal in surgery and is associated with profound shock. Blood transfusions are now administered during the course of the operation. All of the authors' patients underwent the single stage operation, whereas in many of the earlier cases several stages were used. In reviewing the literature the authors note that the operation has been done 79 times and has been followed by 46 deaths, thus having a mortality rate of 59·5%.

Injuries Peculiar to Modern Football.

LUCIAN H. LANDRY (*The American Journal of Surgery*, June, 1935) reports a study of the injuries occurring in modern football. In 1931 there were 37 reported deaths among football players in the United States of America. In 1934 this number was reduced to 26. At least four weeks of training are required to produce the greatest percentage of injuries. Amongst the joint injuries reported those of the knee are most frequent. Next in order of susceptibility come the ankle and shoulder joints. The necessity for X ray examination in all joint injuries is stressed. Side tackling is the commonest cause of knee injury. The internal semilunar cartilage is affected far more frequently than the external, the ratio being approximately 15 to 1. The author operated on six players with injuries to this cartilage, and all returned to the game the following year. The author advocates firm strapping of the ankles prior to any game. The so-called football shoulder is really an acromio-clavicular dislocation. "Horse collar" splinting is all that is required for satisfactory healing in most of these cases. Dislocations of the shoulder or elbow are rare. Fractures of the nose are frequently seen, and the best results are obtained by immediate reduction before much œdema is evident. Visceral injuries are not common, but hæmaturia is sometimes seen from a lacerated kidney. Two of the author's patients required nephrectomy.

Continuous Drip Blood Transfusion.

H. L. MARRIOTT AND A. KEKWICK (*The Lancet*, April 27, 1935) describe a technique for the prolonged administration of citrated blood by a con-

tinuous drip transfusion, and discuss some possible indications for its use. Several donors are required, and all must be compatible with the recipient and with each other or agglutination will occur in the reservoir when the specimens of blood are mixed. In one case at the Middlesex Hospital ten donors contributed 5,620 cubic centimetres of blood, while in general the amount taken from donors varies from 200 to 900 cubic centimetres, according to their age, weight, sex and physical condition. The technique is described fully, the closed method being employed. The principal difficulty in the use of citrated blood for prolonged drip transfusion is that the red cells tend to sediment in the reservoir and block the outlet, and this difficulty is overcome by the simple expedient of bubbling a continuous stream of filtered oxygen through the reservoir. A further point in the technique is that the blood is delivered to the recipient through a glass cannula, which is secured into one of the veins in the middle of the forearm. This allows the patient the use of his arm during the transfusion. The rate of flow is adjusted to deliver a litre in seven hours, although the apparatus may be used for much more rapid delivery than this. When a transfusion is being given to a very anæmic patient, a very rough calculation of the amount of blood required may be made from the deficiency of the hæmoglobin below an ideal of 100%, 500 cubic centimetres of blood being allowed for each 9% of deficiency. The article concludes with a discussion of the possible indications for the use of such transfusions.

Nephrectomy for Malignant Tumours of the Kidney.

W. WALTMAN AND W. F. BRAASCH (*The American Journal of Surgery*, April, 1935) discuss the technique of nephrectomy and nephro-ureterectomy for malignant tumours of the kidney. In the majority of cases of such tumour a diagnosis can be made from the excretory urogram, provided visualization of the pelves and calyces is complete, but solitary cyst of the kidney may be hard to differentiate from malignant disease. The advisability of operation is influenced by the degree of fixation and the size of the tumour and by the condition of the patient and the absence of metastases. Severe anæmia is a contra-indication, as it is usually due to toxæmia or metastases rather than to loss of blood by hæmorrhage. Hypertension and hyperpyrexia may be noted in the presence of renal tumours and are not of themselves contra-indications to operation. Pre-operative radiation may be of considerable value as an adjunct to surgery, especially if the tumours are of the embryonic or large adenocarcinomatous type. The most generally used incision for nephrectomy and nephro-ureterectomy begins at the costo-vertebral angle which overlies the affected kidney, curves down towards the crest of the ilium and then runs parallel to the crest of the ilium, the whole incision taking the shape of a miniature hockey stick. Extraperitoneal removal of the kidney is performed and the tumour is incised and inspected. If it is found to involve primarily the cortical portion of the kidney, as do adenocarcinomata, sarcomata and Wilm's tumours, the wound is then closed; but if it is found to be a papillary squamous cell carcinoma, ureterectomy has to be performed, as such tumours tend to metastasize along the ureter. Ureterectomy is performed by the standardized method, two incisions being used, care being taken to remove the intravesical portion of the ureter. The anterior transperitoneal approach is occasionally preferable if renal tumours are very large, as it permits exploration for metastases; and, further, the dissection of important structures from the tumour and its pedicle can be performed under visual control. The higher mortality is partly due to the fact that this procedure is chosen only when the tumour is of large size, and in such cases the risk of removal is recognized as being greater. A warning is issued against making large incisions in the fatty capsule of the kidney when an adenocarcinoma is being explored, as the resulting free hæmorrhage from the large venous plexus therein will continue to an alarming degree and may be exceedingly difficult to control without ligation of the renal pedicle. A further note is added in reference to the postero-lumbar incision, when much better exposure may be obtained by subperiosteal resection of the twelfth rib, which is a routine practice in many European clinics when nephrectomy is being carried out for neoplasm.

Stricture of the Common Bile Duct.

K. H. AYNESWORTH (*The American Journal of Surgery*, June, 1935) reports the history of a woman who underwent cholecystostomy in 1915. Later in the same year her gall-bladder was removed. In 1922 she developed biliary obstruction due to stricture of the common duct. The stricture was of short extent and was excised, the channel being reconstructed by end-to-end anastomosis. Two weeks later an obstruction again occurred, and on this occasion less than 1·25 centimetres (half an inch) at the end of the common duct was patent. A number 16 French catheter was split at one end and each half was inserted into the hepatic ducts and the small portion of common duct remaining was tied around it. The other end of the catheter was passed into the duodenum for about 2·5 centimetres (one inch). Adjacent tissues were carefully sutured over the catheter. A soft rubber drain was led down to the gall-bladder region and the wound was closed. The patient has enjoyed fairly good health for the past twelve years. Subsequent X ray examinations showed the catheter to be passing through the intestines. The author outlines the advances in surgical technique with reconstruction of the common bile duct. In 1909 Sullivan used a rubber tube in performing an anastomosis on dogs. In 1912 Brewer was successful in man, using Sullivan's technique. W. J. Mayo reported successful cases in 1916 in which the rubber tube was employed.

Value of X Rays in the Diagnosis of Acute Abdominal Conditions.

I. W. PONEMON (*American Journal of Surgery*, April, 1935) discusses the value of X rays as an aid in the diagnosis of acute abdominal conditions, particularly when they are used as an adjunct to a careful clinical examination. The author does not present new theories, but records certain known facts which aid the surgeon in making the diagnosis and in determining what he may expect to encounter on the operating table. The examination consists of taking one skiagram of the abdominal region with the patient in the supine position, and another when he is upright, care being taken to include the diaphragm and lower part of the chest. The diagnosis depends on the demonstration of abnormal collections of air or fluid in the abdominal cavity or alimentary canal. The method is of use in coronary disease, pneumonia, ruptured peptic ulcer, appendicitis, intestinal obstruction and peritonitis, but the surgeon can expect the greatest amount of help in cases of intestinal obstruction.

Peptic Ulcer in Childhood.

C. C. NESSELRODE AND D. N. MEDEARIS (*The Western Journal of Surgery, Obstetrics and Gynecology*, April, 1935) report in a seven-year-old boy the incidence of peptic ulcer which was treated by gastro-enterostomy. When acute ulceration occurs in the upper intestinal tract it may give rise to *melæna neonatorum*. The ulcers occurring in later childhood have the typical indurated edges, but show a greater tendency to perforation than those in adults. The anatomical distribution resembles the susceptible areas in adults. The typical adult history is rarely obtained. Alkalis may not bring relief. The author's patient had recurring epigastric pain, persistent vomiting and hæmatemesis. There was a persistent deformity of the duodenum on examination by X rays. The patient experienced two large hæmatemeses in April, 1934, and in June again required transfusion following upon a third attack. At operation the duodenum was found to be adherent to the liver. The patient had an uneventful recovery. The diagnosis of ulcer must be considered in children of all ages who have chronic or recurring abdominal pain, particularly if associated with hæmorrhage.

British Medical Association News.

SCIENTIFIC.

A MEETING OF THE NEW SOUTH WALES BRANCH OF THE BRITISH MEDICAL ASSOCIATION was held in the Robert H. Todd Assembly Hall, British Medical Association House, 135, Macquarie Street, Sydney, on June 27, 1935, DR. A. M. DAVIDSON, the President, in the chair.

Insomnia.

DR. H. M. NORTH read a paper entitled: "Sleep and Sleeplessness" (see page 167).

DR. G. C. WILLCOCKS read a paper entitled: "Insomnia due to Physical Causes" (see page 170).

DR. A. M. DAVIDSON thanked the speakers for their papers and referred to the mention that had been made of soldiers who slept while marching. During the War Dr. Davidson had been with the Light Horse. In this corps all the troops had to get up once during the night to do stable picket duty. The effect of this broken rest was to make the men irritable and to make them lose weight. It was necessary for them to be allowed one month in three away from outpost duty in order to recover, but even when they were "resting" stable pickets spoilt their sleep.

In practice it was difficult to decide which was the most suitable drug for sleeplessness, as the formation of habit should always be guarded against. Dr. Davidson concurred with Dr. Willcocks that cold feet were a serious cause of insomnia. He maintained that the large range of hypnotic drugs recently added to the medical practitioner's armamentarium was a godsend in times of stress. A greater proportion of people had suffered from anxiety and mental strain during the last seven years than in previous times as a result of the financial depression. Dr. Davidson considered that the barbiturates and the bromides had saved many people from mental breakdown.

DR. R. C. WINN congratulated the speakers on their interesting papers. Dr. North's paper showed evidence of wide reading, both literary and scientific, and Dr. Willcocks had dealt very thoroughly with the physical aspects of the subject. Dr. Winn wished to stress the psychological factors responsible for insomnia. He referred again to the soldier and maintained that since soldiers could sleep while under shell fire the physical causes were usually over-stressed. Even when physical causes for insomnia did exist, they were usually not the chief factors responsible, but merely "the last straw that broke the camel's back". Insomnia was mainly due to psychological causes, even when physical causes coexisted, and in many cases psychological factors were the only cause. The underlying cause was mental conflict, for which psychotherapy was obviously the best treatment. Insomnia, being one of the symptoms of mental conflict, was often accompanied by other symptoms, such as irritability and worrying. If, in addition to insomnia, other symptoms of mental conflict were present, then psychotherapy was even more plainly indicated. Dr. North had drawn attention to mental conflicts in his paper and had indicated that those which originated during adult life could often be relieved by such measures as a holiday. Yet relatively simple measures might be ineffective because, even when mental conflicts of the adult type existed, they were usually accompanied by underlying unconscious conflicts dating from childhood. Psychoanalysis was the only method of psychotherapy which was capable of removing the cause of the mental conflicts which had commenced before the patient was six or seven years of age; but a full analysis took a great deal of time. However, psychological symptoms could often be relieved by a short analysis.

One important thing that psychoanalysis had brought to light was the difficulty of sleeping experienced by the psychoneurotic patient, which was due to the unconscious wish not to sleep. This was a special example of the psychoanalytical principle that any over-determined conscious emotion was the result of the opposite unconscious wish. The wish not to sleep was in its turn due to unconscious fear of dreaming—the revival of the night terrors of childhood, which adults spoke of as nightmares. The night terrors of childhood were states of anxiety, and it was anxiety which psychoanalysis aimed to relieve.

DR. A. W. CAMPBELL said that Dr. Willcocks had murmured his name during the reading of his paper, and it might perhaps be interesting to consider sleep from the neurological aspect. It seemed wonderful that a few grains of an hypnotic drug could induce sleep; and all the more so when it was considered that there was scarcely any part of the central nervous system the irritation of which would not induce sleeplessness. Obviously the higher parts of the brain must be set at rest. No doubt the woman mentioned by Dr. Willcocks, whose insomnia was relieved by an aperient, had her higher centres set at rest. Turning to the lower centres, such as those for movement, sight and smell, it was obvious that all should be quietened in order to induce sleep. Yet it was not invariably necessary that they should be quietened. But to most people sleep came more readily in darkness, and most preferred absence of noise, though this was not essential. This was proved by the existence of sleeping cars on trains. In regard to the motor apparatus, it was important that there should be complete muscular relaxation. Dr. Willcocks had mentioned soldiers sleeping when marching. Those who served in Cairo would remember that it was a common sight to see the Arab police standing asleep on duty.

In regard to the lower parts of the system, Dr. Campbell mentioned the sleeplessness that accompanied heart disorder *et cetera*. He came to the conclusion that there was no part of the nervous system irritation of which did not induce insomnia. Out of this came the point that (as Dr. Willcocks had said) they could not believe in a special centre for sleep. It was impossible to conceive of a small centre in the hypothalamic region that could govern all the other parts of the central nervous system. One might as soon expect there to be a centre for eating and drinking as for sleeping.

DR. OSCAR DIETHELM offered his congratulations to the speakers on their excellent papers, the subject of which had given food for thought. The question that interested many was the treatment of this intractable condition. He agreed with Dr. Willcocks that before resorting to hypnotics every avenue should be explored, especially in regard to hygienic measures. It might be found that here was some simple cause, as in many cases of physical disorder. It might be possible to adjust the patient's sleep by adjusting his pillows, particularly in hypertensive states, or a simple aperient to overcome any constipation or intestinal stasis might be the deciding factor. It was important to examine thoroughly for any possible cause and to use all general hygienic measures and such considerations before resorting to hypnotics. Psychotherapeutic methods of persuasion and encouragement might also be used, as well as physical therapy in the form of massage and warm baths. On the other hand, if hypnotics had to be resorted to, too long a delay in their administration might cause trouble. In regard to hypnotics, it was important in the first place to make sure that the patient's complaint was genuine and that he or she was not really able to sleep. Often close inquiry and observation would reveal the fact that several hours' sleep had been obtained. In the second place it was important to consider the attitude of the patient towards drugs. It was well to assure the patient that the drugs were not toxic and would do him no harm. Certain cases of insomnia were intractable, especially those that were an expression of an anxiety state. The difficulty partly arose because it was found that when the anxiety state had been caused to disappear the insomnia persisted and a fresh anxiety regarding sleep had arisen. In such cases the use of hypnotics should not be delayed too long.

Dr. Diethelm agreed with Dr. Willcocks in the use of carbogen in connexion with sleep. He mentioned the case

of a man with a hypertensive heart with decompensation who could not sleep in spite of drugs; with carbogen he got excellent sleep. It was often most valuable. Sleeplessness with encephalitis and the inversion of the sleep rhythm was a very trying condition. Dr. Diethelm had known of a case in which a warm wet pack had been successful in inducing sleep in this condition.

PROFESSOR W. S. DAWSON said that the papers had covered so much ground that he hesitated to add anything further. He would mention one point, however, in connexion with the neuroses. As Dr. Diethelm had said, it was important to ascertain the extent of the insomnia, and reassurance as to the possible effects of loss of sleep had therapeutic value. It was useful to assure restless patients that rest in the middle of the day did not spoil a good night's rest.

In regard to anæmia of the brain, Dr. Dawson said that occasionally patients were found who slept better when their heads were propped up, while others might sleep well without pillows.

As to the existence of a sleep centre, Dr. Dawson said that it seemed that abnormal somnolence, so far from being associated with tumour in any particular region of the brain, depended rather on an increase of intracranial tension.

Alcohol as a nightcap was sometimes effective, as also in some cases was the use of a cold pack.

DR. HASLETT FRAZER said that most of his views coincided with those of Dr. Winn. Dr. Willcocks's reference to carbon dioxide in insomnia reminded him of an experience in 1923 on the west coast of South America. He was called to see a young man in Le Paz, Bolivia, who was supposed to be suffering from acute mania, a journey to an altitude of 10,300 feet. The patient suffered from insomnia brought on by mountain sickness and apparently had *delirium tremens*. He was given "Adalin" and hyoscine and still could not sleep. A German practitioner was called in consultation and gave the patient an infusion of cocaine leaves as well as oxygen and carbon dioxide. The door and windows were closed and the patient was asleep in ten minutes and was all right the next day.

In regard to mountain sickness and insomnia, Dr. Frazer had been at a high altitude for five days and did not sleep well. The popular remedy in the district was an infusion of coca leaves in water. The leaves of the coca plant were chewed by the natives. But to European sufferers a cupful of an infusion of coca leaves and water was given and relieved insomnia. The Bolivians had a particular resistance to cocaine.

Speaking of insomnia due to pain, Dr. Frazer could speak feelingly, since for the past three days he had suffered from a brachial neuritis. He took "Hebaral sodium" and managed to get five hours' sleep; he had noticed no after-effects from taking this drug.

DR. F. A. E. LAWES congratulated the readers of the papers and said that he had been particularly interested in what Dr. Willcocks had said concerning the relief of pain and the use of morphine. He referred to a patient suffering from severe pain after nephrectomy, who had previously had a repair operation of the kidney; in this case the pain returned and it had been suggested by the surgeon that the pain was functional and not organic. Nevertheless it had been necessary to use morphine. He thought that the pain in the instance referred to was organic, because he had found a neuroma in the scar. The patient was greatly relieved by the injection of a 1% solution of quinine and urea hydrochloride into the neuroma. It was difficult in some cases to know when to stop giving morphine, for the pain would frequently return.

Referring to the patient mentioned by Dr. Willcocks, who suffered from pain in the stump of his arm, Dr. Lawes suggested that a local anæsthetic should be injected into the painful area. This procedure had relieved the pain of a patient of his who suffered from cranial neuralgia, due to infected tonsils. After four sleepless nights her neuralgia was relieved by injection of a local anæsthetic into the affected area. He thought that a local anæsthetic might sometimes be used to replace morphine. It might also be worth trying in neuritis that was near the surface.

DR. J. A. L. WALLACE said that it might be of interest to the members to hear of one instance of mania that occurred at Callan Park, in which the patient caused a great deal of disturbance and trouble. Every night for weeks the patient yelled for the greater part of the night, disturbing many of the other patients. Several remedies were tried to overcome this condition and all the paraldehyde in the dispensary was exhausted. At last it was found that a good dose of castor oil given in the early evening was the best "hypnotic". The castor oil was continued for several days and the disturbance was cured. Perhaps this might correspond to the case cited by Dr. Willcocks. Depleting the alimentary system to begin with might be the best method of treatment for some cases of insomnia. This could then be followed by some suitable hypnotic.

DR. N. D. ROYLE thought that insomnia was most often due to anoxæmia. This in turn was due to constriction of the arterioles and venules. Sleep was accompanied by dilatation of the arterioles and venules and constriction of the capillaries. This occurred after a superior thoracic ganglionectomy, when the patient slept for days intermittently. Sleeplessness in fever was due to constriction of the arterioles by toxin. He could tell Dr. North that the sleeplessness in *encephalitis lethargica* could be cured by a superior thoracic ganglionectomy.

In regard to the treatment of insomnia, it was important to teach the patient to relax. A course of exercises with training in inhibition was a necessity. On one occasion Dr. Royle was demonstrating to a patient how to go to sleep; when he woke up the patient had gone home.

DR. H. A. RIDLER asked whether either of the speakers could tell him how to quieten the crying of the baby that was so proverbial in the middle of the night.

Dr. North, in reply, said that, in regard to the question of the cerebral circulation, it was interesting that some observers had found insomnia to be consequent on cerebral anæmia, and others attributed it to hyperæmia. In a recent article in *Brain* it had been pointed out that the condition was sometimes anæmia and sometimes hyperæmia. It seemed that the state of the cerebral circulation in sleep was not dependent on sleep *per se*, but on other conditions in the organism. Cerebral hæmorrhage frequently occurred during sleep, dreams of a certain nature perhaps causing a rise of blood pressure.

In regard to the use of barbitone, Dr. North said that he preferred not to prescribe this drug at bed time, as it was slow in its action and might lead to drowsiness next day; it was better to give it at about 3 o'clock in the afternoon. This was useful, because it was thus possible to prescribe the drug without the patient's knowing that a hypnotic was being ordered. To put the patient to sleep rapidly, Dr. North thought that chloral or "Medinal" was the best drug to use. In regard to paraldehyde, he could bear out what Dr. Willcocks had said about habit formation; the habit was most often formed by alcoholic patients. Medical practitioners were apt to treat alcoholics by paraldehyde; but actually its action was similar to that of alcohol. For this reason Dr. North never prescribed paraldehyde to alcoholics.

In regard to *delirium tremens*, Dr. Willcocks mentioned alcohol as the best means of producing sleep. There was no doubt that if the patient was very restless there was nothing like alcohol to tide him over till he could do without it.

Dr. North agreed with Dr. Winn in stressing the psychological factor in insomnia, but he thought that Dr. Winn over-stressed the importance of mental conflicts in childhood. The fear of insomnia was more important, and patent medicine advertisements were just as bad. Lord Horder had pointed out that many of these patients were trying to escape from life. They wanted to be relieved of the difficulty and tension of living. They had a conception of their natures that was contrary to reality; they imagined that they had need for sleep when they had none. In these instances it was important to try to

inculcate healthy interests and to give the patient some outlet to his natural urges in life. If these urges were not stifled, then rest would come later.

Dr. Willcocks, in reply, thanked the speakers for their kindly congratulations and said that there were no points to answer. He referred Dr. Ridler to Dr. Winn in his inquiry concerning the crying baby. Dr. Willcocks thanked the speakers, because in this discussion he had learned more than he had in any discussion for a long time.

A MEETING OF THE NEW SOUTH WALES BRANCH OF THE BRITISH MEDICAL ASSOCIATION was held at the Royal Prince Alfred Hospital, Camperdown, on May 23, 1935. The meeting took the form of a series of clinical demonstrations by members of the honorary staff.

Arterial Hypertension.

DR. ALLAN WALKER demonstrated two cases of arterial hypertension to illustrate points in prognosis. The first patient was a female, aged fifty-five years, who had been admitted to the hospital eight years previously almost comatose. She had no recollection of being taken to hospital or of her first few days there, and was in a drowsy state, with definite mental confusion. Lumbar puncture had been performed, the fluid being under slightly increased pressure and containing 50 cells to the cubic millimetre. The blood urea then was 57 milligrammes per 100 cubic centimetres of blood, and the figures for the urea concentration test read as follows: 2·13%, 2·15%, 2·57% and 2·96%. The urine had contained a moderate amount of protein. The diagnosis in the records stood as chronic interstitial nephritis, uræmia, but Dr. Walker thought that there was no doubt that this patient had suffered one of the cerebral crises that occurred in arterial hypertension. She had been under constant observation for the past eight years. Her blood pressure remained in the neighbourhood of 190 to 200 millimetres of mercury for the systolic reading and 120 for the diastolic. The urine often contained a cloud of protein on being tested. She was rather emotional, readily tired, a little breathless, but had remained well and had never been threatened with another attack. Attention was drawn to the condition of the retinæ, which had never shown any vascular change, except pinching of the veins, and the bearing of this observation on prognosis was pointed out.

Dr. Walker's second patient was a man, aged fifty-five years, who was just convalescing from a cerebral thrombosis. This was of the usual capsular type and had caused partial paralysis of the left side of the body, with a certain amount of sensory disturbance. The history was that the patient had complained of headaches for two years, and about eighteen months ago the sight of the right eye had suddenly become poor and remained poor. He had suffered from a certain degree of substernal pain with dyspnœa on exertion. Three weeks before admission to hospital he had experienced weakness of the left arm, which came on while he was reading, and the left leg was found to be weak also. From this condition the patient had made a remarkably good recovery. He had signs of cardiac enlargement and the systolic blood pressure was 190 millimetres of mercury and the diastolic reading was 115 millimetres. The most important observation to be made on this patient was the state of the fundi. On the left side was some swelling of the disk, and on the right scattered hæmorrhages were seen. One of the retinal arteries on the right side had been completely occluded and was represented by a white cord only. The futility of attempting any prognosis from the blood pressure readings alone would be obvious from these two cases, and the value of the retinal findings presented a sharp contrast.

Pulmonary Tuberculosis and Artificial Pneumothorax.

Dr. Walker's third patient was a small girl, aged twelve years. This child came from a family that was affected by tuberculosis; one sister was extremely ill with advanced disease at the time. This child had been examined as a contact three years previously and no signs of disease were detected. The skiagram of that date could be seen to show no definite lesion. Recently, however, the child appeared small and delicate, and a skiagram now showed a typical subapical shadow of the type characteristic of chronic pulmonary tuberculosis of the adult type. In view of her history, artificial pneumothorax was induced and skiagrams were shown to demonstrate that the lesion, which was unilateral, was coming under control. The child was looking very well and was extremely easy to handle, the procedure never having given any trouble from the first.

Dr. Walker pointed out that this case was an illustration of some of the curious problems that were met with in the study of tuberculosis. While the child's resistance had broken down, the very nature of the lesion, with its cavitation and fibrous tissue reaction, showed the capacity to resist. Since she had not contracted a more florid and general type of infection, it might be assumed that her natural immune powers were reasonably high. There was another factor in this case that was often lost sight of in the wards of a hospital. In the presence of active and disabling illness in other members of a family it was easy for the nutrition of a little child like this to suffer, for all the care and means were expended, or at least chiefly directed, towards the healing of the already sick. These economic factors in such a case probably were of greater importance than those connected with the degree of infection in the child's present immediate environment.

Pleural Adhesions and Artificial Pneumothorax.

On behalf of the staff of the Anti-Tuberculosis Dispensary, Dr. A. S. Walker and Dr. A. W. Morrow presented a series of three patients in whom pleural adhesions had been divided in order to allow a more complete collapse of the lung during treatment by artificial pneumothorax. It was pointed out that the reason for regarding seriously the presence of pleural adhesions in the maintenance of pneumothorax for pulmonary tuberculosis were as follow.

Adhesions were the most frequent cause of failure in treatment by artificial pneumothorax.

It was said that at least 25% of the cases were suitable for pneumolysis. Pneumolysis was advisable when possible for the following reasons: (i) Adhesions were said to be responsible for the occurrence of effusions in partial pneumothoraces. (ii) Adhesions were present as a rule over the most diseased portion of the lung and thereby prevented the collapse of that area of the lung which was most affected. (iii) The collapse of a cavity might be prevented by an adhesion and thus the sputum was not diminished and the ever-present possibility of a localized or widespread dissemination of the disease was not prevented. (iv) If the adhesion was attached to a thin-walled cavity there was a possibility, during sudden changes of intrapleural pressure, as in straining and coughing, of the lung tearing and the cavity rupturing into the pleural cavity, leading to a spontaneous pneumothorax, a tuberculous or mixed empyema.

In the three patients presented pneumolysis had been performed. Dr. R. A. Money had carried out the operative procedure in each case.

The first patient was a male, aged sixteen years, who had presented himself at the anti-tuberculosis dispensary in September, 1933, complaining of cough with sputum, sometimes blood-stained; the cough had been present for six weeks. He had a left subapical lesion with cavitation. Pneumothorax was performed in October, 1933. Collapse was never quite complete and some sputum remained. In November, 1934, Dr. Money performed pneumolysis, a fan-shaped subapical adhesion being sectioned. Collapse was complete after this, the sputum had diminished and the patient had gained seven or eight pounds in weight. He had been doing light work.

The second patient was a male, aged seventeen years, who first attended the dispensary in December, 1930, as a contact. He was then symptomless, and X ray examination of his chest revealed no abnormality. In April, 1934, he

was found to have tuberculous infiltration of the left apical and subapical regions of his left lung. Pneumothorax was performed in June, 1934. His condition improved slightly, but his cough persisted and gradually became worse. X ray examination revealed a large apical cavity which was being prevented from collapsing by some apical adhesions. The adhesions were cut in December, 1934. His progress since then had been slow, but his sputum had diminished considerably. For the last six weeks sputum had been absent.

The third patient was a male, aged twenty years, who two years ago presented himself with loss of weight, cough and sweats. Pulmonary tuberculosis was diagnosed; the patient went to Waterfall Sanatorium. Last year he became more breathless on exertion and as no headway had been made, artificial pneumothorax was begun in October, 1934. The lung had not completely collapsed and, owing to a band of adhesions, a cavity remained patent, causing persistence of cough and sputum, which still contained tubercle bacilli.

On May 16, 1935, thoracoscopy and cutting of adhesions by cautery were carried out by Dr. R. A. Money. The band was much broader than appeared on the skiagram. On May 23, 1935, it was noted that progress had been uneventful. Cough and sputum had lessened.

It was explained that a recent skiagram showed that the posterior part of the band was still present, but the anterior part was divided, allowing further collapse of the cavity. There was some effusion in the pleura.

Acholuric Jaundice.

DR. LAURENCE H. HUGHES showed a female patient, aged twenty-two years. She had always been "weak, pale and tired". Appendicectomy had been performed four years ago; two days after operation she developed jaundice, which lasted about a week. Since then she had had intermittent attacks of jaundice every few weeks, usually preceded by epigastric pain and vomiting. She complained of headache, palpitation and dizziness. She had no cough and had not lost weight. Occasional epistaxis had occurred. The family history was irrelevant.

When the patient was admitted to hospital examination revealed pallor and a slight icteric tinge. The spleen was enlarged, its border being palpable 7·5 centimetres (three inches) below the costal margin. No abdominal tenderness was present. The liver was not enlarged. The urine was normal; it contained no bile. Other systems were clear. The Graham test gave no reaction. A fractional test meal revealed hyperchlorhydria. The Van den Bergh test gave an indirect positive reaction.

Examination of the blood showed that the red cells numbered 3,200,000 per cubic millimetre, the hæmoglobin value was 60% and the colour index was 0·93. Anisocytosis and polychromasia were present; the reticulocytes comprised 36% of the total red cells. Leucocytes numbered 5,300 per cubic millimetre; 72% of them were neutrophile cells. The fragility test was applied. Hæmolysis began at 0·62% and was complete at 0·36%; in the control test the figures were 0·44% and 0·36%.

Dr. Hughes pointed out that a general improvement had taken place in the blood picture, but the percentage in the result of the fragility test was still high and the reticulocyte count was 23%. The spleen had become much smaller.

Cirrhosis of the Liver.

Dr. Hughes's second patient was a female, aged twelve years. The child had lived in northern Queensland all her life; she had been in good health until five years ago, when she had had an attack of vomiting and diarrhœa with jaundice; the latter lasted about two weeks. She had had recurrent attacks of vomiting and diarrhœa ever since; the attacks were occasionally associated with slight jaundice and often with right-sided abdominal pain. She had been having treatment for an enlarged liver for the last three years. The child was quite well otherwise, except that she was thin and undersized. The family history was good.

On examination the patient was pale and undersized; her nutrition was poor. The abdomen was large, as a result of considerable enlargement of the liver. No splenic enlargement was detected; the other systems were clear. The child at present had persistent diarrhœa; no jaundice was present.

Dr. Hughes explained that the Wassermann test had been applied, but had yielded no reaction. Neither X ray examination of the liver nor an opaque meal had revealed any abnormality. The Casoni test had yielded no reaction. The stools contained a small amount of blood, but no pus; no amœbæ were found. The erythrocytes numbered 4,200,000 per cubic millimetre; slight anisocytosis and poikilocytosis were present. The leucocytes numbered 5,900 per cubic millimetre; 70% were neutrophile and 3% were eosinophile cells.

Dr. Hughes said that during the past few weeks ascites had made its appearance; at the time of the meeting it was very pronounced. About three litres of fluid had been removed two weeks previously and the abdominal cavity was filling again. The ascitic fluid was normal in appearance; it contained no blood. The fluid contained many small lymphocytes; no organisms were recovered on incubation.

Myelocytic Leuchæmia.

Dr. Hughes also showed a girl, aged eight years, who was born in New Caledonia and had lived there ever since. She was a healthy infant and had had no previous illnesses. Two years ago she was knocked down by a lorry and had a lot of abdominal bruising. Fifteen months ago she had a tooth extracted; the bleeding was difficult to control and she lost a lot of blood for two days afterwards. Ever since then she had been pale and had been losing weight. Nine months ago she first noticed a swelling in the left side of the abdomen, which had been getting rapidly bigger. Three months ago the child had "bleeding into the skin of the leg"; no other hæmorrhages occurred. The family history was good.

On examination at the time of her admission to hospital the child was pale and had slight pyrexia. Her gums and throat were healthy. She had a protuberant abdomen, due to a very great enlargement of the spleen—the lower pole was at the *symphysis pubis*. No ascites was present. The liver was slightly enlarged. No generalized glandular enlargements were felt. The urine was normal. Other systems were clear.

Examination of the blood showed that the erythrocytes numbered 2,170,000 per cubic millimetre; the hæmoglobin value was 43% and the colour index 1·0. Anisocytosis and polychromasia were noted and normoblasts and megaloblasts were present. The leucocytes numbered 262,000 per cubic millimetre; myeloblasts, metamyelocytes, premyelocytes and myelocytes were present.

Dr. Hughes said that five applications of deep X ray therapy had been given to the spleen between April 10 and 23, 1935; the child was also given iron and arsenic in increasing doses. At the time of the meeting the erythrocytes numbered 3,630,000 per cubic millimetre and the leucocytes 2,200. The spleen was about half its original size.

Dry Bronchiectasis.

DR. COTTER HARVEY showed a girl, aged seventeen years, who had spent all her life in the country. She had been operated upon for empyema following pertussis at the age of six years, from which she made a complete recovery. She had had no further illness. Two months previously she had a small hæmoptysis, followed two weeks later by a larger one. She was sent to hospital, where no further symptoms developed, nor was any sputum obtainable for examination. After making an X ray examination of her chest, however, the radiologist stated: "The condition is definitely tuberculous; cavitation and fibrosis are present on the right side, and even a small extension from the hilum is present on the left side." In view of this report a bad prognosis was given.

Dr. Cotter Harvey said that examination had shown the girl to be well nourished and healthy-looking, with no

clubbing of the fingers. Evidence of fibrosis was found in the right lung, and it was noticed that the heart and trachea were drawn to the right. A lipiodol bronchogram was taken; it revealed characteristic saccular bronchiectasis in the middle zone of the right lung. The Mantoux test gave no reaction. The condition was regarded as pulmonary fibrosis, complicated by hæmorrhagic dry bronchiectasis.

Dr. Cotter Harvey stated that the girl would probably have further hæmoptyses, but, as she lived in a good environment in the country, prognosis for life seemed good. Superadded infection might, however, lead to a more serious condition, when it would be necessary to consider whether there should be any active surgical intervention.

Atelectatic Bronchiectasis.

Dr. Cotter Harvey's next patient was a girl, aged fifteen years. She had had pertussis when two years old, with cough and sputum ever since, but no hæmoptysis. She was found to be a well developed healthy-looking girl without clubbing of the fingers. The only abnormal sign found was an occasional râle at the base of the left lung. A lipiodol bronchogram was taken, and it revealed behind the heart a characteristic triangular shadow of atelectasis with saccular bronchiectasis.

Dr. Cotter Harvey showed that the triangular shadow was present in the plain skiagram, but was likely to be missed owing to the superimposition of the heart shadow.

Mitral Stenosis.

Dr. Cotter Harvey's last patient was a woman of seventy-six years. She had had rheumatic fever at the age of four years, and again at the age of sixteen years. She had never had any symptoms referable to her heart and had sought medical advice only on account of indigestion. Dr. Cotter Harvey drew attention to the presystolic thrill and murmur detectable over the apex beat and to the fact that the average age at death in a patient suffering from mitral stenosis was thirty-five years.

Hyperthyreoidism Treated by Deep X Ray Therapy.

DR. A. T. NISBET showed a man, aged twenty-six years, who had been referred to him by Professor Lambie. The patient was admitted to hospital on October 31, 1934, with very definite exophthalmos; his pupils were moderately dilated, he had a moist skin, tremor, and a large uniform swelling in the thyreoid area. The following week he had persistent vomiting and was given rectal injections of saline solution, glucose and Lugol's iodine. Albumin and acetone bodies were present in the urine.

On November 18, 1934, the basal metabolic rate was +50%. Deep X ray therapy was commenced on November 30, 1934, but, as the man was in an extremely low condition and at times almost unconscious, very small doses were administered, and even then after a fortnight's treatment it was thought advisable to stop any further X ray therapy for a fortnight. At no time was the dose increased at one sitting, so that it took until March 15, 1935, to complete the course of X ray treatment. On that date the basal metabolic rate was +43%. The patient was still extremely ill, but within the previous three or four weeks his vomiting and other gastric symptoms had ceased and he was much more nearly normal mentally. On March 16, 1935, he was discharged from hospital. His pulse rate was still 120.

On examination at the time of the meeting he had put on 12·6 kilograms (two stone) in weight, his pulse rate was 100, tremor was very much decreased, he was quite able to travel about by himself and said that he felt very well. No basal metabolic rate estimation was to be made for another month.

Dr. Nisbet said that this case was demonstrated to show how a patient unfit for operation and almost *in extremis* might benefit by small doses of X radiation. The time was yet too short for the patient to have improved more than he had, but the outlook was very good indeed.

Dr. Nisbet's second patient was a woman, aged twenty-four years, who had been referred by Dr. Blackburn in October, 1932. On examination she had swelling of the thyreoid, more towards the mid-line than laterally, and exophthalmos. Her pulse rate was 130 in the minute. Her basal metabolic rate on September 10, 1932, was +90%. Deep X ray treatment was commenced on October 19, 1932, the first course being completed on November 28, 1932. On November 30, 1932, the basal metabolic rate had dropped to +76%. The patient greatly improved until June 1, 1933, when the basal metabolic rate was +39%. Previous to this she had had a second course of radiation in March of 1933.

There had still been some doubt as to whether X radiation would be sufficient to combat the disease without operation, but by the time October had arrived the basal metabolic rate had fallen to −14%. At the time of the meeting the patient was extremely well, showing no evidence of any tumour in the neck. Dr. Nisbet said that she had married about fifteen months ago, had a normal pulse rate, and had put on 9·45 kilograms (one and a half stone) in weight. It was now nearly two years since any deep X ray therapy had been given.

Dr. Nisbet's third patient was thirty-six years of age and had been referred by Dr. A. Collins. The patient was admitted to hospital on January 21, 1935, with a tumour in the thyreoid region, uniformly enlarged, and with a systolic bruit. There was also tremor and palpitation, with exophthalmos. Deep X ray therapy was commenced on January 31, 1935, moderate doses being given at each visit three times a week. The course was completed on March 4, 1935.

Dr. Nisbet said that the patient was demonstrated at the meeting to show the state of a thyreotoxic patient only six weeks after irradiation. The skin of the neck still showed some redness, but the exophthalmos was commencing to disappear and tremor was much less. The patient was not nearly so nervous. The basal metabolic rate on January 30, 1935, was +48%.

Dr. Nisbet also showed a married woman, aged forty-five years. On June 22, 1932, the patient had had a firm diffuse swelling occupying the situation of the thyreoid gland. The right lobe was slightly larger than the left. Mild exophthalmos was present. There was a fine tremor and the pulse rate was 120. The basal metabolic rate on June 11, 1932, was +53%. Under medical treatment the basal metabolic rate on August 22, 1932, had fallen to +15% and the patient was discharged from hospital on the last day of August of that year.

She was readmitted to hospital on September 23, 1932, when the consulting surgeon thought that, as the patient's condition did not seem to settle down, she was not fit for operation, and he advised deep X ray therapy. This was commenced with the basal metabolic rate at +80%, pulse rate at 140, and with general toxic disturbance. X radiation was given in October, 1932, and in May, 1933, and a further course was given in August, 1934, at the end of which time the basal metabolic rate had fallen to +19%. To the present this had remained the same and the patient had put on 3·15 kilograms (half a stone) in weight. There was still some slight exophthalmos, but very little thyreoid tumour was noticeable. The patient stated that she felt very well and was able to go about her ordinary daily duties.

(To be continued.)

ANNUAL MEETING, MELBOURNE, 1935.

NAVY, ARMY AND AIR FORCE MEDICAL SERVICES BALL.

AT a ball to be given in the Melbourne Town Hall on Friday, September 13, 1935, the President and members of the Third District Australian Army Medical Corps Officers' Mess will invite friends to meet overseas members of the British Medical Association who have an interest in the Navy, Army and Air Force Medical Services.

For guests other than overseas visitors *entrée* will be by private invitation of individual members of the Mess. Any Australian practitioner desirous of becoming a host will be welcome to honorary membership of the Mess, provided he is accredited with service in any unit of His Majesty's forces.

To those not yet in receipt of a circular a copy will be sent on application to the Mess Secretary (Major H. G. Furnell, c.o. D.D.M.S. Office, Victoria Barracks, Melbourne). Those who have not yet replied to the circular are requested to do so immediately, giving the names and addresses of their intended guests.

NOMINATIONS AND ELECTIONS.

THE undermentioned has applied for election as a member of the New South Wales Branch of the British Medical Association:

Mowat, John Kenneth, M.B., B.S., 1935 (Univ. Sydney), Goodooga.

The undermentioned have been elected members of the Victorian Branch of the British Medical Association:

Tuddenham, Frederick Guy, M.B., B.S., 1934 (Univ. Melbourne), Warrnambool and District Hospital, Warrnambool.

Paull, Ivor John, M.B., B.S., 1932 (Univ. Melbourne), 98, River Street, South Yarra, S.E.1.

Rosenfield, Marcus Melbourne, M.B., B.S., 1931 (Univ. Melbourne), Women's Hospital, Carlton, N.3.

Claridge, Eric Julian Carré, M.B., B.S., 1935 (Univ. Melbourne), 25, Winter Street, Malvern, S.E.4.

Macmillan, Wilfred Ewart, M.B., B.S., 1925 (Univ. Melbourne), Langtree Park, Eleventh Street, Mildura.

Carew-Smyth, Raymond Ponsonby, L.R.C.P. *et* S. (Edinburgh), L.R.F.P.S. (Glasgow), 1930, Base Hospital, Mildura.

THE STAWELL ORATION.

THE Medical Secretary of the Victorian Branch of the British Medical Association announces that the second Stawell Oration will be delivered at 8.15 o'clock p.m., on Friday, September 6, 1935, at the Medical Society Hall, Albert Street, East Melbourne. All members of the Branch are invited to attend.

NOTICE.

A MEETING of the Section of Neurology and Psychiatry of the New South Wales Branch of the British Medical Association will be held at British Medical Association House, 135, Macquarie Street, Sydney, on August 15, 1935, at 8.15 o'clock p.m. An address will be given by Mr. Rex Knight, of the Psychology Department, University of Aberdeen. The subject of the address will be: "The Practical Handling of Nerotic Patients". All members of the Association are invited to attend.

Medical Societies.

THE PUBLIC MEDICAL OFFICERS' ASSOCIATION, VICTORIA.

THE Public Medical Officers' Association which was formed in Victoria in 1928, has recently been resuscitated after a long period of inactivity. The Association is modelled on the lines of the Public Medical Officers' Association of New South Wales. Membership is open to all whole-time medical officers employed by the Government or other statutory bodies in Victoria; the majority of those so qualified have already enrolled as members.

The officers elected for the present year are: *President*, Dr. C. P. Rowan; *Honorary Secretary*, Dr. W. J. Beveridge; *Honorary Treasurer*, Dr. V. P. Johnson; *Honorary Auditor*, Dr. H. Melville.

The Committee is formed by representatives of groups in the various services: Public Health, Dr. Rowan; Mental Hygiene, Dr. V. P. Johnson and Dr. J. Adey; Repatriation, Dr. W. J. Beveridge and Dr. A. McKay; Education, Dr. Jane Greig; Municipal, Dr. John Dale; Chief Secretary's Office, Dr. J. Tennyson Allan.

The relation of the Association to other professional organizations was considered at a meeting held at the Medical Society Hall on July 26, 1935. It was then decided that the Association should remain an independent and a purely medical organization and that it should endeavour to cooperate with the British Medical Association in matters of mutual interest.

The Committee was instructed to watch the interests of the members in regard to the full restoration the financial emergency salary cuts.

THE VICTORIAN MEDICAL BENEVOLENT ASSOCIATION.

THE annual meeting of the Victorian Medical Benevolent Association was held on May 31, 1935.

Annual Report.

The annual report was presented by Dr. E. L. Gault, the Honorary Secretary. The report is as follows.

The work of the Association has been carried on quietly during the year. In addition to small grants made to dependants of medical men for specific purposes, the Association has continued regular assistance to medical men or their widows, which has been much appreciated.

In one case the widow of a medical man, left penniless, with two children, has received £1/1/- a week and has been enabled to keep things going.

In another case a grant of 10/- a week to an aged medical man has just turned the scales in his favour.

A grant of £1/1/- a week to the aged widow of a well known medical man of other days has enabled her to enjoy a few modest comforts at the end of life.

A highly respected medical man, smitten at once by financial disaster and broken health, has been provided with a trained nurse to care for him in his helplessness.

The Committee gratefully acknowledges that this good work has been made possible by the fine response to its appeal for subscribers made through the medium of the British Medical Association. Inasmuch as cases of distress are likely to become increasingly numerous, it hopes that all members of the British Medical Association in Victoria may find it possible to add to their annual subscription the small sum of 5/6 per annum, which will make them members of the Victorian Medical Benevolent Association.

During the year the Committee sustained a heavy loss by the death of Dr. G. T. Howard, its senior Vice-President and a valued member of the Committee for many years.

Financial Statements.

Dr. Leonard Mitchell, the Honorary Treasurer, presented the financial statements. A summary of the statements is published herewith.

SUMMARY OF BALANCE SHEET ADOPTED AT THE ANNUAL MEETING, MAY 31, 1935.

	£	s.	d.
Total funds at December 31, 1933	8,124	13	8
Additional surplus for year	355	15	7
Total funds at December 31, 1934	£8,480	9	3

SUMMARIZED STATEMENT OF RECEIPTS AND PAYMENTS.

Receipts.

	£	s.	d.
Balance, January 1, 1934	446	17	11
Interest received	288	4	10
Subscriptions per British Medical Association	152	4	6
Subscriptions direct	4	13	0
Donation	5	0	0
	£897	0	3

Payments.

	£	s.	d.
Gratuities	88	10	0
Printing, Stationery, Postages	7	17	11
Accountancy Fee and Expenses *re* Transfer of Investments	8	17	0
Bank Charges	0	5	0
Balance	791	10	4
	£897	0	3

Correspondence.

TREATMENT OF PYELITIS.

SIR: Since the presentation of my paper on pyelitis before the South Australian Branch of the British Medical Association (*vide* THE MEDICAL JOURNAL OF AUSTRALIA, July 13, 1935) an interesting piece of research work has been reported by Rosenheim, of University College Hospital, London, in *The Lancet* of May 4, 1935.

Appreciating the value of the ketogenic diet in the treatment of pyelitis, Rosenheim thought it possible to find some substance that might be administered orally and have similar bacteriostatic power as the keto-acids. This would allow the patient to continue with a normal diet. To give β-hydroxybutyric acid by mouth under normal metabolic conditions is useless in controlling urinary infections, for the acid is completely oxidized. Rosenheim found that mandelic acid ($C_6H_5.CHOH.COOH$) taken by mouth was excreted completely and unaltered in the urine. It was non-toxic and, given with ammonium chloride, rendered the urine bacteriostatic. The doses required *per diem* were 12 grammes of mandelic acid and 8 grammes of ammonium chloride.

Rosenheim has investigated the subject very thoroughly by animal experiments and by clinical tests in human subjects. The procedure, being free from the restrictions and unpleasantness involved in ketogenic dieting, promises to be of great value.

Yours, etc.,
A. R. SOUTHWOOD.

170, North Terrace,
Adelaide,
July 16, 1935.

STERILIZATION OF MENTAL DEFECTIVES.

SIR: A departmental committee under the Ministry of Health in England issued a report last year in which it recommended that, subject to various safeguards and limitations, voluntary sterilization should be legalized in the case of:

(*a*) A person who is mentally defective or who has suffered from mental disorder.

(*b*) A person who suffers from, or is believed to be a carrier of, a grave physical disability which has been shown to be transmissible.

(*c*) A person who is believed to be likely to transmit mental disorder or defect.

At a recent meeting of the Executive Committee of the Council for Mental Hygiene for New South Wales, our President, Professor Harvey Sutton, proposed that the Council should review the evidence for and against sterilization with the object of giving an opinion as to whether the time has arrived for the legalization of this operation for eugenic purposes. A small committee was appointed to collect evidence and opinions on this subject. I would be glad to hear from anyone who is interested in this matter, or who has evidence in regard to mental or physical defects in which there is clear indication of hereditary transmission.

Yours, etc.,
W. S. DAWSON,
Honorary Secretary, Council for Mental Hygiene for New South Wales.

135, Macquarie Street,
Sydney,
July 19, 1935.

THE MORTALITY OF APPENDICITIS.

SIR: I feel sure that my old friend and colleague, Dr. J. Colvin Storey, will accept in good part any dissenting opinions I may hold as to the dangers inherent in the use of ethyl chloride as an agent for general anæsthesia. Frankly, I am on the side of Dr. Shineberg. That the drug is powerful and rapid in action nobody who uses it can doubt, but in my view these properties in no way constitute a valid reason for its disuse.

Like Dr. Storey himself, I was once resident anæsthetist at a large metropolitan hospital; and never once, in a list numbering many hundreds of patients, did the administration of ethyl chloride cause me the smallest anxiety. The same remark applies with equal force to my experience, later, as honorary anæsthetist at another large institution.

I do think, however, that the employment of ethyl chloride in a Clover's inhaler should be abandoned forthwith as a routine procedure for such operations as tonsillectomy by the guillotine. That way danger lies—the drug is so volatile, it evaporates so rapidly, that the patient, receiving a massive dose of it in one gulp, is likely to pass into a state of general spasm which is dreadful to behold. But administered in dribbles, drop by drop, on an open mask, and only until the stage at which the patient commences to babble in a dreamy, incoherent way, the drug is safe in competent hands, while to the patient it is a boon of the first order. Speaking as one who has more than once taken a siesta upon the operating table, I should feel inclined to view the anæsthetist who proposed to put me to sleep with ether—and nothing but ether—in much the same light as the Emperor of Abyssinia appears to regard Mr. Mussolini.

To my mind the drug has one great disadvantage only—it is far too expensive. For the life of me I cannot understand why it should be so dear.

Yours, etc.,
FDK. J. BRIDGES.

Chatswood,
New South Wales,
July 26, 1935.

"DOCTOR."

SIR: This is a hardy perennial which blooms at varied times, but as yet has borne no fruit. The term is in general use by the public to describe the vocation rather than the degree held. The O.E.D. has it: "'Dr.', of medicine, also pop. of any medical man, M.D. or not."

When I took my bachelor degree I had M.B., C.M. added on my card. As "Physician" observes in his letter of July 20: "The surgeon makes no false claim, and the use of 'Mr.' has now become a tradition with him." Precisely—I found it taken for granted that I was practising surgery, whereas I was but a very minor general practitioner.

"Physician" suggests we should have an honest name-plate—John Smith, M.B., B.S. So we can, but, when visiting, are we to say that John Smith, M.B., B.S., or John Smith, physician, has called to see the patient?

Then we have the double London and triple Scottish diplomates. What are they to do? Must the most eminent F.R.C.P. call himself "Mr." and so inform all and sundry that he is specializing in surgery?

We bachelors have no wish to sail under false colours, but until an M.D. or the faculty can find a satisfactory designation I fear we must look upon it as a courtesy title, just as we give the courtesy title of "captain" to a master mariner in command.

If you look in THE MEDICAL JOURNAL OF AUSTRALIA, pages 117 and 118, you see that Dr. Holmes à Court gives Oliver Latham, M.B., Ch.M. (Sydney), the courtesy title of "Dr."

Yours, etc.,

"M.B."

July 29, 1935.

WHOOPING COUGH AND VACCINE TREATMENT.

SIR: I have recently re-read, with considerable interest, the article by Dr. Ivan Blaubaum in the journal of April 6, on whooping cough, with particular reference to pertussis vaccine.

In Dr. Blaubaum's series 137 cases of pertussis were treated with vaccine, and eleven patients were given no vaccine, and were regarded as controls. In any scientific experiment it is axiomatic that the number of "controls" should be of the same order of magnitude as the number of "cases"; and I suggest that it is unscientific to draw conclusions from an experiment in which the "controls" are so small in number, and represent less than 10% of the "cases". Dr. Blaubaum also informs us that of the eleven controls, four were not given injections (and thus became controls) because of complication already existing. Under these circumstances it is not surprising that the average duration of the disease in the controls was longer than that in the cases treated with vaccine.

I wish to make it clear that I do not attack the treatment of pertussis with vaccine, which is a matter upon which I do not feel justified in venturing an opinion; but merely point out that Dr. Blaubaum's conclusions cannot be scientifically justified by the series of cases which he has reported in his article. He would do well in future not to allow any element other than chance to enter into his selection of controls, and to arrange for his controls to be comparable numerically with his cases, for only thus will we arrive at the true facts of the case.

Yours, etc.,

HUGH LATHROP MURRAY.

9, Turnbull Avenue,
Toorak, S.E.2,
Melbourne,
July 30, 1935.

Obituary.

LAURENCE LINDLEY POLLOCK PATERSON.

SOME weeks ago the death of Dr. Laurence Lindley Pollock Paterson, which occurred on July 5, 1935, at Macleod, Victoria, was announced in these columns.

Laurence Lindley Pollock Paterson was born in New Zealand on September 26, 1882. He came to Melbourne, qualified at the Melbourne Veterinary College and practised as a veterinary surgeon before the War. On December 12, 1914, he was appointed to a commission in the Australian Army Veterinary Corps of the Australian Imperial Force. He served in Egypt, Sinai and France, and was promoted captain and mentioned in dispatches. He was severely wounded on April 29, 1918, and lost his right leg, which was amputated through the thigh. On his return to Australia he attended a post-graduate course and was admitted to the degree of Bachelor of Veterinary Science in 1919.

He found it difficult to practise as a veterinary surgeon because of physical incapacity, and commenced the medical course in the University of Melbourne. Towards the end of the course he visited Great Britain and completed the final year in 1926, being admitted a member of the Royal College of Surgeons of England and a Licentiate of the Royal College of Physicians of London.

Returning again to Melbourne, he obtained appointment as junior medical officer at the Repatriation General Hospital, Caulfield, in March, 1927. In October, 1928, he was appointed Medical Superintendent at the Repatriation Sanatorium, Macleod, Victoria.

Dr. A. Hugh Melville, Senior Medical Officer, Repatriation Commission, Victorian Branch, writes:

Dr. Paterson was always interested in the welfare of his patients and maintained this interest after they were discharged from the sanatorium, his position as a member of the Medical Board for Tubercular Pensioners keeping him in touch with numbers of his former patients. He was a keen reader, anxious to maintain touch with all developments in the treatment of tuberculosis. He was generous and a lover of all things beautiful, works of art and the beauties of Nature alike. Through his efforts, ably supported by Mrs. Paterson, the surroundings of the residence at the sanatorium have been tremendously improved, trees, shrubs and flowers of many kinds having converted a somewhat bare spot into an extensive and lovely garden. His example and guidance developed into a valuable adjunct of treatment, for he inspired the patients who were ambulatory to indulge in horticultural pursuits to such an extent that many prizes for exhibits have been secured by them.

His genial smile and jovial personality will be keenly missed by his colleagues of the staff of the Repatriation Commission.

DANIEL MULCAHY.

WE regret to announce the death of Dr. Daniel Mulcahy, which occurred on July 8, 1935, at Perth, Western Australia.

DIXIE PAUMIER CLEMENT.

WE regret to announce the death Dr. Dixie Paumier Clement, which occurred on July 25, 1935, at Perth, Western Australia.

Proceedings of the Australian Medical Boards.

QUEENSLAND.

THE undermentioned has been registered, pursuant to the provisions of *The Medical Acts, 1925 to 1933*, as a duly qualified medical practitioner:

Oxby, Donald Russell, M.B., B.S., 1935 (Univ. Melbourne), Brisbane.

THE STAWELL MEMORIAL FUND.

The undermentioned subscriptions have been received for the Stawell Memorial Fund:

£5 5s.: M. D. Silberberg.
£3 3s.: J. Ringland Anderson.
£1 1s.: D. M. Morton, W. E. Kennan, H. S. Newland.

Books Received.

AIDS TO OPHTHALMOLOGY, by N. B. Harman, M.A., M.B., F.R.C.S., Hon. LL.D.; Eighth Edition; 1935. London: Baillière, Tindall and Cox. Foolscap 8vo., pp. 250, with illustrations. Price: 3s. 6d. net.

AIDS TO SURGERY, by C. A. Joll, M.S., M.D., B.Sc., F.R.C.S., and R. C. B. Ledlie, M.B., B.S., F.R.C.S.; Sixth Edition; 1935. London: Baillière, Tindall and Cox. Foolscap 8vo., pp. 622, with illustrations. Price: 7s. 6d. net.

THE CARE OF THE AGED, THE DYING AND THE DEAD, by A. Worcester, M.D., Sc.D.; 1935. London: Baillière, Tindall and Cox. Crown 8vo., pp. 77.

SIMPLE INSTRUCTIONS FOR DIABETIC PATIENTS, by D. C. Hare, M.D., M.R.C.P.; Second Edition; 1935. London: H. K. Lewis and Company, Limited. Foolscap 8vo., pp. 24. Price: 1s. net.

Diary for the Month.

Aug. 13.—Tasmanian Branch, B.M.A.: Branch.
Aug. 13.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
Aug. 20.—New South Wales Branch, B.M.A.: Ethics Committee.
Aug. 20.—Tasmanian Branch, B.M.A.: Council.
Aug. 21.—Western Australian Branch, B.M.A.: Branch.
Aug. 21.—Victorian Branch, B.M.A.: Clinical Meeting.
Aug. 22.—New South Wales Branch, B.M.A.: Clinical Meeting.
Aug. 23.—Queensland Branch, B.M.A.: Council.
Aug. 27.—New South Wales Branch, B.M.A.: Medical Politics Committee.
Aug. 28.—Victorian Branch, B.M.A.: Council.
Aug. 29.—South Australian Branch, B.M.A.: Branch.
Aug. 29.—New South Wales Branch, B.M.A.: Branch.

Medical Appointments.

Dr. F. M. Reid has been appointed Public Vaccinator, Balwyn District, Victoria.

* * *

Dr. R. L. Park (B.M.A.) has been appointed, pursuant to the provisions of Section 123 of the *Navigation Act*, 1912 *to* 1934, to act at the Port of Melbourne, Victoria, as Medical Inspector of Seamen.

* * *

Dr. R. A. Lewis (B.M.A.) has been appointed Government Medical Officer at The Rock, New South Wales.

* * *

Dr. R. N. Burton (B.M.A.) has been appointed Government Medical Officer at Texas, Queensland.

Medical Appointments Vacant, etc.

For announcements of medical appointments vacant, assistants, *locum tenentes* sought, etc., see "Advertiser", pages xvi, xvii, xix.

Gippsland Hospital, Sale, Victoria: Resident Medical Officer.

Launceston Public Hospital, Launceston, Tasmania: Resident Medical Officer.

Lidcombe State Hospital and Home, Lidcombe, New South Wales: Junior Medical Officer.

Renwick Hospital for Infants, Sydney, New South Wales: Resident Medical Officer.

Royal Hospital for Women, Paddington, Sydney, New South Wales: Junior Resident Medical Officer.

Medical Appointments: Important Notice.

Medical practitioners are requested not to apply for any appointment referred to in the following table without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

BRANCH.	APPOINTMENTS.
New South Wales: Honorary Secretary, 135, Macquarie Street, Sydney.	Australian Natives' Association. Ashfield and District United Friendly Societies' Dispensary. Balmain United Friendly Societies' Dispensary. Friendly Society Lodges at Casino. Leichhardt and Petersham United Friendly Societies' Dispensary. Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney. North Sydney Friendly Societies' Dispensary Limited. People's Prudential Assurance Company Limited. Phœnix Mutual Provident Society.
Victorian: Honorary Secretary, Medical Society Hall, East Melbourne.	All Institutes or Medical Dispensaries. Australian Prudential Association, Proprietary, Limited. Mutual National Provident Club. National Provident Association. Hospital or other appointments outside Victoria.
Queensland: Honorary Secretary, B.M.A. Building, Adelaide Street, Brisbane.	Brisbane Associate Friendly Societies' Medical Institute. Chillagoe Hospital. Members accepting LODGE appointment and those desiring to accept appointments to any COUNTRY HOSPITAL, are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.
South Australian: Secretary, 207, North Terrace, Adelaide.	Officer of Health, District Council of Elliston. All Lodge Appointments in South Australia. All Contract Practice Appointments in South Australia.
Western Australian: Honorary Secretary, 205, Saint George's Terrace, Perth.	All Contract Practice Appointments in Western Australia.
New Zealand (Wellington Division): Honorary Secretary, Wellington.	Friendly Society Lodges, Wellington, New Zealand.

Editorial Notices.

Manuscripts forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to The Medical Journal of Australia alone, unless the contrary be stated.

All communications should be addressed to "The Editor", The Medical Journal of Australia, The Printing House, Seamer Street, Glebe, New South Wales. (Telephones: MW 2651-2.)

Members and subscribers are requested to notify the Manager, The Medical Journal of Australia, Seamer Street, Glebe, New South Wales, without delay, of any irregularity in the delivery of this journal. The management cannot accept any responsibility or recognize any claim arising out of non-receipt of journals unless such a notification is received within one month.

Subscription Rates.—Medical students and others not receiving The Medical Journal of Australia in virtue of membership of the Branches of the British Medical Association in the Commonwealth can become subscribers to the journal by applying to the Manager or through the usual agents and booksellers. Subscriptions can commence at the beginning of any quarter and are renewable on December 31. The rates are £2 for Australia and £2 5s. abroad *per annum* payable in advance.